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WOUNDS OF THE HAND.¹

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WOUNDS of the hands form a large proportion of injuries sustained by man whatever his occupation may be. The first treatment of a simple wound of the hand is often the deciding factor in the final result, and yet in many hospitals the least experienced member of the resident medical staff has to accept this responsibility. Of recent years specialist treatment has been provided in teaching hospitals for many surgical conditions; but in spite of the number of injuries to the hand treated, no special department under the care of a surgeon has been established, to my knowledge, where the patient is under the same supervision from begin-

ning to end and a careful history with progress notes is recorded. At Sydney Hospital the assistant medical superintendent exercises control over the out-patient treatment of wounds of the hand, and since this procedure has been adopted the number of serious infections has greatly diminished.

It is of interest to note that in the 1935 statistical report of the Department of Labour of New York there were 22,523 injuries to the hand out of 69,777 cases.

The following extracts are taken from an excellent article by Niel E. Eckelberry, M.D., in *The American Journal of Surgery*, Volume XLI, 1938, page 51:

I have made a study of the accidents to the hand and finger of the employees of the Consolidated Edison System which occurred on the job during the period from 1930 to 1936 inclusive. The diversified occupations in this group, representing an average number of approximately 46,000 employees, gives a fair idea of the incidence of hand and finger injury in occupations in general. The ratio of male to female employees is approximately 6 to 1. The ratio of those doing manual occupations to those engaged in clerical work is 2 to 1.

¹ Read at a meeting of the New South Wales Branch of the British Medical Association on July 27, 1939.

TABLE I. (After Eckelberry.)
Accidents to Fingers, 1930 to 1938 Inclusive.

Conditions.	Number of Accidents.	Percentage of Total Accidents.	Total Days Lost.	Average Number Days per Case.	Percentage of Lost Time.
Abrasions and lacerations ..	237	47.21	2,640	11.20	32.94
Punctures ..	14	2.79	76	5.5	9.95
Contusions ¹ ..	37	7.37	258	7.0	9.21
Sprains ..	6	1.20	93	15.5	1.16
Fractures and dislocations ..	116	23.11	2,631	22.67	32.71
Amputations ² ..	38	7.17	1,784	49.5	22.18
Foreign bodies ..	15	2.98	307	13.75	2.67
Burns ..	36	7.17	277	7.75	3.44
Other injuries ..	5	1.00	68	13.60	0.84
Total ..	502				

¹ One death not included.

TABLE II. (After Eckelberry.)
Accidents to Hand, 1930 to 1938 Inclusive.

Conditions.	Number of Accidents.	Percentage of Total Accidents.	Total Days Lost.	Average Number Days per Case.	Percentage of Lost Time.
Abrasions and lacerations ..	90	32.97	1,260	14.0	28.26
Punctures ..	11	4.03	100	9.0	2.24
Contusions ..	25	10.25	355	12.5	7.96
Sprains ..	27	9.89	268	10.0	6.01
Fractures and dislocations ..	48	17.58	1,407	29.33	31.56
Amputations ¹ ..	1	0.37	51	51.0	1.14
Foreign bodies ..	5	1.83	29	6.0	0.65
Burns ..	60	21.98	796	13.25	17.85
Other injuries ..	3	1.10	193	64.33	4.33
Total ..	273				

¹ One hand injury resulting in amputation at forearm not included.

TABLE III. (After Eckelberry.)
Accidents to Hands and Fingers, 1930 to 1938 Inclusive.

Conditions.	Number of Accidents.	Percentage of Total Accidents.	Total Days Lost.	Average Number Days per Case.	Percentage of Lost Time.
Abrasions and lacerations ..	327	42.19	3,909	12.0	31.27
Punctures ..	25	3.22	176	7.0	1.41
Contusions ¹ ..	65	8.39	613	9.50	4.90
Sprains ..	33	4.26	361	11.0	2.89
Fractures and dislocations ..	164	21.16	4,038	24.63	32.30
Amputations ² ..	37	4.77	1,835	49.60	14.68
Foreign bodies ..	20	2.58	236	11.80	1.89
Burns ..	96	12.39	1,073	11.20	8.58
Other injuries ..	8	1.04	261	32.63	2.08
Totals ..	775	100.00	12,502	16.13	100.0

¹ One death not included.

² One hand injury resulting in amputation at forearm not included.

From the situation of the hands on the body ambulatory treatment in these cases is possible and this is undoubtedly responsible for many of the bad results obtained. Adequate splinting to the part and rest to the body are not secured. This point is well illustrated by the frequency with which a nurse or resident medical officer is seen endeavouring to carry on with an infection of the finger.

With all wounds of the hand certain essentials in treatment apply: (i) The whole hand must be carefully examined in addition to the site of the wound, hæmorrhage arrested, and shock treated; (ii) the wound should be cleansed in such a way that further infection by the process is avoided; (iii) contaminated tissue must be removed, also foreign bodies if at all possible; (iv) the wound should be closed as soon as this can be done with safety; (v) the injured tissues must be put at complete rest. The importance of this procedure cannot be over-estimated.

Wounds of the hand vary from a slight abrasion or needle prick to the most severe lacerations, crushing injuries and burns. Probably abrasions and lacerations with resulting infection are the most serious. Possibility of accidental syphilitic infection of the hand must be remembered.

In the twenty minutes allotted to me tonight I propose to refer, with the aid of some slides taken from Christopher's "Minor Surgery", to some of the infections of the fingers resulting from wounds, and I expect to learn much from the discussion later.

In passing, the use of "Prontosil" and the like in the treatment of streptococcal infections of the hand can be decided on only after careful consideration of all the factors in the individual case. Any rule-of-thumb method is dangerous.



FIGURE I.
Cellulitis of the arm, showing rapid subsidence of swelling after delayed incision.

The signs and symptoms of erysipelas and cellulitis are well known, but the serious consequences of any surgical interference by incisions in cases of lymphangitis, and of premature incisions in cellulitis, are often not realized and the value of rest and fomentations is forgotten.

Infections of the Finger Nail.

Eponychia or pus blister involving the epidermis of the eponychium is treated by excision of the roof of the pus blister and application of a mild antiseptic ointment, for example, 2% mercurial ointment.

Paronychia infection or abscess, involving the epithelium at the lateral border of the nail, may be

continuous with a subungual abscess or with an eponychia.

Paronychia is a combination of eponychia and paronychia. In the early stages diffuse inflammation is present. At this stage continuous hot boric fomentation may result in cure or formation of



FIGURE II.

Severe cellulitis of the arm following abrasion of the finger. No incision was made till pus had formed. The photograph shows the stage of convalescence. The patient recovered without any disability.

localized abscess to be opened by an incision lateral to the nail, care being taken to avoid injury to the matrix.

Subungual abscess is an abscess under any part of the nail and may be independent of paronychia or eponychia.

FIGURE III.
Diabetic gangrene.

If the abscess has burrowed under the nail, the nail should be elevated by a small hook, and the proximal part cut away; care should be taken to avoid injury to the delicate matrix or overlying eponychium.

Sometimes the whole nail has to be removed. If the nail is removed care must be taken to see that every portion of the nail is removed.

Whitlow.

At the distal portion of the palmar surface of the finger connective tissue forms a closed sac including the diaphysis of the bone, and fibrous septa run vertically from the palmar surface of the skin dividing the sac into several chambers.

FIGURE IV.
Specific onychitis.

Infection of these spaces may be confined there or attack the bone early.

A very trivial wound from a needle may be the cause of this serious condition.

Symptoms are: (a) Extreme pain, (b) swelling, (c) throbbing pulsation, (d) tenderness of phalanx itself. The top of the finger is red, swollen and exquisitely tender to the touch. Sleep is impossible.

FIGURE V.
Paronychia.

Prompt incision under general anaesthesia is imperative. Incision should be made laterally, and the wound should be kept open with "Vaseline" gauze.

Suppurative Tenosynovitis.

Suppurative tenosynovitis frequently follows penetrating wounds of stab or puncture variety.

Symptoms are: (a) Exquisite tenderness over the course of the sheath and limited to the sheath, (b) flexion of fingers, (c) exquisite pain on extension of the finger, most marked at the proximal end of the finger.

The treatment is by wide opening of the tendon sheath. The incisions should be at the lateral margins and limited to the individual phalanges, not crossing the flexor creases of the volar surfaces of the fingers. However, this rule cannot always be followed; the great thing is to provide complete and adequate drainage.

Conclusion.

In conclusion, the following points should be borne in mind:

1. In the surgical treatment of infections of the hand, a bloodless field is necessary. A blood-pressure tourniquet will provide this.
2. General anaesthesia is necessary.
3. Strict asepsis is required at operation and during after-treatment to avoid mixed infection.
4. The affected part must be elevated and kept at rest at all times, not intermittently.
5. Ambulatory treatment is bad.
6. It is our duty to regard wounds of the hands with all seriousness, and to remember that the loss of full function of the hands to an artisan is almost as serious as a brain injury to ourselves.

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TREATMENT OF WOUNDS OF THE HAND.¹

By LENNOK TEECE, M.D. (Sydney), F.R.A.C.S.,
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A COMMON feature of wounds of the hand is, of course, division of a tendon, either flexor or extensor. This class of injury is obviously of great economic importance and frequently results in gross permanent impairment of function in the hand. The fact must be stressed that tendon suture is always to be regarded as a major operation and must not be carried out in the septic surroundings of a casualty room. The occurrence of post-operative sepsis nearly always results in complete failure of any tendon suture. The operation demands as much care and aseptic technique as does any other and is not to be performed by anyone whose anatomical knowledge has grown dim.

Let us primarily consider wounds of the flexor tendons and firstly those of the flexor tendons on the length of the fingers themselves where they lie within the flexor sheath.

In the course of an experience which covers some hundreds of tendon injuries in this situation, I have never seen a successful primary or secondary suture of a flexor tendon when the point of division has been actually within the flexor sheath itself. Certainly, no harm is likely to result if at the time of suture of the skin wound the divided flexor tendon or tendons are at the same time united; though with the realization that there will not be any appreciable return of function. Probably the main reason for this unhappy state of affairs is that the sutured tendon is necessarily of greater diameter than a normal tendon, and the tendon sheath, even if it could be accurately reconstituted, is too small to allow the thickened tendon to glide in normal fashion within it. In addition, once the sheath has been opened the tendon always contracts adhesions which prevent it from functioning in anything like normal fashion. In an effort to overcome this it has been frequently suggested that the *flexor sublimis* should be completely extirpated so that the sheath will have to accommodate only one tendon, namely, the *flexor profundus*. This procedure also has proved ineffective, and even after removal of the sublimis tendon the profundus still contracts adhesions with the neighbouring tissues and refuses to glide.

I have had experience of two patients whose cases supported these views which I have just expressed.

One was that of a man who ran the pointed end of a file into the palm of his hand about the region of the neck of one of the metacarpal bones without actually dividing any tendon. The small punctured wound healed by first intention, but he subsequently developed a trigger finger. Operation revealed the fact that there was a small patch of scar tissue in the *flexor sublimis* tendon of the middle finger just at the mouth of the flexor sheath. This scarring where the point of the file had evidently penetrated the tendon had caused slight thickening of it with the result that on attempted extension of the finger the thickened area of the tendon became jammed in the mouth of the flexor sheath. This was, of course, easily dealt with by splitting up the mouth of the flexor sheath a short distance. However, the degree of thickening in this case was very much less than the amount of thickening that results in the line of suture of any divided flexor tendon, however carefully the operation may have been carried out.

This experience confirmed my view that any sutured flexor tendon is too thick to move along the flexor tunnel.

I also met with another patient who in using a very narrow bladed chisel sustained a tiny punctured wound on the front of the second phalanx of one finger, thereby dividing the *flexor profundus* tendon. The wound was no bigger than a tenotomy puncture and was perfectly clean. This then was a case almost uniquely favourable for a successful tendon suture as there was an absence of any sepsis and scar tissue formation was certain to be at a minimum. In this case I did perform a tendon suture and the operation was a complete failure; there was no return of voluntary flexion in the distal joint.

Attempts at secondary suture of flexor tendons in this situation are apt to be actually harmful inasmuch as they usually necessitate a longitudinal incision of considerable length in order to expose the divided ends; this incision crosses the flexor creases, and healing is usually followed by consider-

¹ Read at a meeting of the New South Wales Branch of the British Medical Association on July 27, 1939.

able scar tissue contraction resulting in an appreciable degree of fixed flexion deformity of the interphalangeal joints. However, a finger which has lost the functions of both the *flexor sublimis* and *flexor profundus* tendons is by no means useless. Metacarpo-phalangeal joint flexion can still be carried out by the action of the lumbricals, though active flexion at the interphalangeal joints is lost.

Provided the patient is not required to work in proximity to any dangerous machinery, he will probably find it better to retain the finger rather than to submit to amputation at the first interphalangeal joint. This is particularly true when the affected digit is the index finger.

I am well aware that Bunnell, of San Francisco, who has written extensively on the subjects of tendon and nerve injuries of the hand, claims to secure good functional results following suture of flexor tendons in this situation. I am open to be convinced that his views are correct, but after examining the results of hundreds of such sutures I am still waiting and hoping to see a successful one.

Division of the long flexor tendon of the thumb causes a very considerable degree of disability. As a result the patient is quite unable to pick up and hold objects between the tips of the thumb and index or other fingers. He has to insert the object to be held deeply into the cleft between the thumb and index finger and hold it there by the action of the intrinsic muscles of the hand. In such cases suture of the divided flexor tendon is perfectly justifiable and the operation is done, not with any hope of restoring active flexion to the terminal joint of the thumb, but rather because after suture and healing of this tendon the terminal joint becomes fixed by the tension of the sutured tendon in an attitude of slight flexion, thereby greatly improving its grasp.

An alternative procedure is to arthrodese the distal joint of the thumb which can readily be done by making a small dorsal incision and removing the cartilage from the opposed articular surfaces and then splinting the thumb with the distal joint in slight flexion for a period of six or eight weeks.

When the flexor tendons have been divided in the palm of the hand before they enter the flexor tunnels, their suture gives very satisfactory results, though unfortunately the injury is often accompanied by division of some of the digital branches of the nerves. Even so, suture of divided flexor tendons in this situation usually results in the development of slight fixed flexion contraction of the digit in question owing to scar tissue contraction.

Suture of flexor tendons at the level of the wrist usually gives eminently satisfactory results, always providing that healing is unaccompanied by sepsis. Flexor tendons are most commonly divided at this level as a result of thrusting the hand through a pane of glass, and these wounds are frequently very extensive, irregular and jagged, and considerable difficulty is often experienced in accurately suturing the skin edges together and avoiding the loss of any

skin as a result of sloughing. Tendon injuries at this level are also frequently complicated by division of the median or ulnar nerve. A complete division of the median nerve in this situation is a most serious injury, and, even if nerve suture is performed immediately and in the most favourable circumstances, a considerable degree of paralysis invariably persists and such recovery as does occur is extremely slow of attainment.

In the region of the hand, and, indeed, in any superficial situation silk should never be employed for tendon suture. Silk as a suture material very frequently gives rise to trouble, and its employment generally results in the formation of a small sinus which continues to discharge a little serum until the offending stitch is extruded from the wound, when finally healing occurs with excessive formation of scar tissue and probably with adhesion of the skin scar to the underlying tendon with consequent limitation in the range of movement. I have found catgut to be perfectly suitable suture material and there is no fear of the bond of union of the tendon giving way through absorption of the gut, always provided that adequate splinting is employed. The commonest cause of failure of tendon suture is inefficient splinting. A moulded plaster of Paris splint, suited in size and shape and position to the individual case, should invariably be employed. Splinting should be originally carried out for a period of three weeks; a longer time than that is unnecessary; and fixation if unduly prolonged much past this period is actually harmful, as irremediable stiffness of the joints and adhesions of the tendon to the surrounding soft tissue may result.

The prognosis of injuries of the extensor tendons is definitely superior to that of wounds of the flexor tendons. Most of these tendon injuries, if unaccompanied by gross sepsis or extensive destruction of skin, result in excellent function. Nevertheless, the prognosis is better when the tendons are divided on the dorsum of the hand or at the level of the wrist joint than when the point of division lies actually over the digits themselves. The one exception to this rule is injury to the extensor tendon over the dorsum of the distal joints of the digits. The tendon may actually be divided in this situation by an open wound, but more commonly the injury received in this situation is a disinsertion, a tearing off of the insertion of the tendon from the base of the distal phalanx without any actual open wound. The condition produced is the so-called drop, or mallet, finger, a condition which generally results from a sudden blow on the tip of the extended digit, forcing it into flexion; it occurs commonly in cricketers or baseballers as the result of their misjudging a "catch". The majority of these patients recover completely, if treated early by splinting of the affected digit with the distal joint completely extended for four or five weeks. Operation, however, invariably makes the patient's condition worse. Operative suture of the tendon at this level, or in the case of the drop finger an operative attempt

at reattachment of the torn insertion, always results in the distal joint becoming stiff in the fully extended position so that both active and passive flexion at the distal joint is abolished. Untreated patients, however, show a negligible loss of function. A full range of active flexion is preserved, but the distal joint lies at rest at an angle of about 140°, and no active extension is possible past this point, though generally full passive extension is preserved. This loss of extension does not seem to diminish a man's working efficiency in any occupation.

The commonest site of division of the extensor tendons to the fingers is immediately proximal to the metacarpo-phalangeal joint, and the prognosis for division at this level is better than when the site of injury is directly over the joint. In the latter case there is apt to be undue scarring of the capsule with consequent limitation of movement. In this connexion it is of importance to remember that it is not always easy to determine by physical examination whether an extensor tendon has been completely divided. Even in complete division some extension, at any rate of the two distal joints, is carried out by the action of the interossei; and in practice it usually transpires that if there is any doubt in one's mind as to whether the tendon is completely divided, operation invariably reveals the fact that there is complete division, usually with the presence of a gap between the ends.

Division of the thumb extensor tendons is extremely common, particularly at the level of the anatomical snuff box, and of the three, the *extensor longus pollicis* most commonly suffers owing to its prominent subcutaneous position. When the *extensor longus pollicis* is divided at this level the retraction of the proximal ends is immediate and considerable, and many instances have occurred in which the operator has failed to locate the proximal end, inasmuch as he is apt to search for it in a position lateral to its true situation. It is usually to be found lying slightly underneath and, after a few days, adherent to the *extensor communis digitorum*. If operation has been delayed till two or more weeks have elapsed from the time of injury, it may be impossible to carry out end-to-end suture.

I have found, however, that a free tendon graft gives a functional result which is in no way inferior to that obtained by direct end-to-end suture. A graft may be obtained either from the *palmaris longus* tendon, where one exists, or alternatively by the use of half the thickness of the *abductor longus pollicis*. In connexion with the *extensor longus pollicis* it must be again mentioned that division at the anatomical snuff box level gives a better result after suture of the tendon than does division over the metacarpal bone or over the first phalanx.

As regards the after-treatment it must again be emphasized that use of plaster of Paris is the only satisfactory method of splinting that can be relied upon to relax the strain on the sutured tendon till healing is complete; and the plaster splint must not only hold the thumb abducted and extended, but also keep the wrist in the position of extension.

Occasional subcutaneous ruptures of the *extensor longus pollicis* and, more rarely, of the *flexor longus pollicis*, do occur as a late sequel to a Colles fracture. In such case the presumption is that the tendon is partly damaged, but not actually torn through at the time the fracture is sustained, and that subsequently after the fracture unites and the splints are removed the frayed and damaged tendon gives way under the stress of normal use.

Suture of divided extensor tendons of the wrist usually also furnishes a satisfactory functional result, except that if suture is at all delayed extreme difficulty may be met with in the approximation of the ends. Speaking generally, injuries to tendons in these regions have favourable results, provided they are uncomplicated by the occurrence of sepsis. However, it is not to be denied that many poor results causing an appreciable degree of permanent disability are encountered. My experience has been that these poor results are due not so much to deficiency in the technique of operation, but to splinting which is inadequate or insufficiently prolonged.

There is a rare condition which, though an injury, is strictly speaking not a wound of the hand, but which is of interest inasmuch as the diagnosis is obscure to anyone who has never previously encountered a similar case. The condition I refer to is a traumatic thrombosis of the palmar vessels. I have encountered two cases, both of which were in men who met with a "jarring" injury of the hand which was followed by the development of a painful lump in the palm of the hand, the lump being very definitely tender and only just big enough to be palpated. In one of these the lump was just medial to the hypothenar eminence where the ulnar artery curves across the palm to become the superficial palmar arch, and in the other it was in the line of the digital artery between the first and second metacarpal necks. In the first case I failed to make a diagnosis till I actually exposed the thrombosed vessel; in the second case diagnosis was evident in the light of my previous experience. In both of these situations the affected vessel was inefficiently protected by the palmar fascia, and in both cases excision of the thrombosed section of the vessel resulted in complete cure.

ANATOMY IN SURGERY.¹

By HUGH R. G. POATE,
Sydney.

SURGERY is defined as "the art or practice of treating injuries, deformities or other disorders by manual operation or instrumental appliances" (Oxford English Dictionary). Today our art has become a very complicated attainment, founded on a close interlocking of many basic sciences with

¹Read at a meeting of the Royal Australasian College of Surgeons, Brisbane, on August 11, 1938.

an expert knowledge of normal anatomy and physiology. This comprehensive study is then applied to the investigation of the sick and maimed; a familiarity with ancillary branches of learning, ever increasing in number and complexity, is necessitated, so that it is now demanded of a surgeon that he be a man of no mean intellectual attainment apart from any manual competence he may display in the practice of his craft.

I mention these matters for two reasons, one being that the social status of the surgeon today is very different from what it was in olden days. The other reason is that it was my original intention to take as my thesis for this lecture "That Surgery is Based upon an Expert Knowledge of Anatomy"; but as I tried to develop the theme I found that so many other factors had influenced the make-up of the modern surgeon that I had to restrict myself to a review of the origin of anatomy as applied to surgery, and finally to the adaptation of but one anatomical principle in the actual practice of our art.

It seems remarkable that deliberate surgery, as we now understand and ply it, has really developed only since Lister gave to our profession the technique and results of his antiseptic principles in 1867, even though Morton had given the first demonstration of ether anaesthesia in surgical practice at Massachusetts General Hospital in 1846, and Simpson had introduced chloroform a year later (1847). Prior to these discoveries the old-time operating surgeons depended almost entirely upon an exact knowledge of the anatomy of their restricted fields, along with a manipulative dexterity which must have been fascinating to witness and report of which has always intrigued me.

In the biographical studies of some of these men there seemed to be some great man just a little further back who had given them the inspiration that compelled their success, and in an endeavour to trace back to the beginnings of it all I have been led along many interesting tracks, some of which I know will also interest you, brief though the story must be.

As far as one can trace it, the earliest record of medical knowledge dates back to the period of civilization in Egypt some sixty centuries ago; but primitive man must have suffered injuries and ailments the lessons of which crystallized into useful knowledge, which, combined with observations on certain animals, led to the distinguishing of the hurtful from the salutary things. In this connexion it is significant that in the definition of surgery already quoted the treatment of injuries is mentioned first. Osler remarks that there seemed to be "no society so primitive without some evidence of the existence of a healing art, which grew with its growth and became part of the fabric of organisation".

We have evidence that even before the early Egyptians what appears to have been trephining was practised among ancient peoples, and neolithic skulls have been found in many parts of the world

with these circular perforations. In ancient Egypt the priests apparently held what knowledge there was of medicine; but their surgery was not highly developed, although it appears that the knife and actual cautery were in use and venesection was practised.

The first physician to stand out clearly in the mists of antiquity was Imhotep, who was renowned for his priestly wisdom and for his knowledge of magic, of medicine and of architecture. It was he who designed the step pyramid at Memphis, near Cairo, the most ancient of all pyramids. His reputation was so great that after his death he became a popular god, and, having healed men in his life, he then took care of them in their journeys after death. Even 2,500 years later his fame was such that the Greeks sought to recognize in him their own Æsculapius. One interesting feature of Egyptian medicine was the strict adherence of the priests to cleanliness of body, clothing and surroundings, in fact an asepsis which, had it been carried out in later centuries, would have been of inestimable benefit to mankind.

The practice of embalming the dead must have demanded some crude knowledge of anatomy and that certain viscera were well known is evidenced by the fact that they were placed in special jars, whilst the earliest known anatomical model is one of a sheep's liver dating from about 2000 B.C. Apparently the liver was regarded as the most important organ of the body and the seat of life. This position it retained for many centuries, and even in Galenic physiology it shared with the brain and the heart in the triple control of the natural, the animal and the vital spirits.

In the Mesopotamian civilization science reached a higher stage than in Egypt, but again was controlled by the priests; yet progress was slight, owing to the belief in the occult powers of darkness and the influence of the heavenly bodies on man's welfare. These cults of astrology, occultism and divination persisted for centuries and were practised even among the Greeks.

One valuable feature of the Babylonian era which has come down to us is the Hammurabi code (2000 B.C.), a body of laws, civil and religious, many of which relate to the medical profession. Medicine then must have been highly organized, practice regulated in detail and operations performed. One interesting and striking feature of the code was the application of the "*Lex talionis*" (an eye for an eye, a bone for a bone, a tooth for a tooth *et cetera*), which must have made medical practice somewhat precarious!

Hebrew medicine reflects both Egyptian and Babylonian influences and is more concerned with the social code than with any advance in knowledge of the human body in either health or disease.

In biblical teaching there is belief in the miraculous, which persists to the present day, as evidenced by the pilgrimages to Lourdes *et cetera*. Strangely enough, Oriental teachings had very little influence on either the understanding of diseases or

on that of the means for their cure, although in other sciences great strides were made. Acupuncture seems to have been the sovereign Oriental surgical remedy, and some crude knowledge of the anatomical danger points is evidenced in the diagrams drawn up for practitioners.

We now come to a consideration of Grecian medicine, which is a striking contrast to the ancient customs and teachings. Freedom of thought divorced from the church was allowed, and with the development of the Greek philosophy came a natural tendency to inquire into the why and wherefore of all things. Thus the physicians, by their powers of observation, learned to reject the untenable fictions, and there began a new era of scientific investigation.

Although the Ionian period did not advance medicine to any degree, its outlook upon Nature influenced students profoundly. Ionian surgery could not have been of great moment, as the famous Heraclitus, probably a pure physician, refers scathingly to those "who cut, burn, stab and rack the sick".

The south Italian school contributed more to medicine, and in certain towns there were medical schools as early as 500 B.C.

Pythagorus, who founded a school at Crotona, was probably one of the most noted physician-philosophers, and his theory of numbers and the importance of critical days, possibly supported by the behaviour of typhus, malaria *et cetera*, influenced medical teachings profoundly for centuries. Alcmaeon, one of the Crotonian school, was distinguished in both anatomy and physiology, and interested himself in the nervous system; later Empedocles carried on and extended this work, introducing the theory of the four elements—fire, air, earth and water—upon the equilibrium of which depended good health. Corresponding to these were the four qualities of heat, cold, moisture and dryness; upon these was later engrafted the doctrine of the humours which from the days of Hippocrates dominated medicine almost up to our own time; even today the laity still make use of the terms then employed, for example "phlegmatic", "choleric", "sanguine", "fiery" *et cetera*.

We now come to a consideration of Æsculapius, who still remains our patron saint and emblematic god of healing. He was a Thessalonian chieftain and fought in the Trojan wars. His two sons, Machaon and Podalirius, became famous physicians; it is said of the former that Nestor carried him off from the field of battle, declaring that a doctor was better worth saving than many warriors unskilled in the treatment of wounds.

The association of the serpent with the rod of Æsculapius dates back to prehistoric days when the snake was regarded as being endowed with supernatural powers and associated with magic and mystery. Later the serpent became the symbol of Apollo, who was the father of Æsculapius.

The many temples of Æsculapius in the following centuries must have been like some of the out-

patient departments of our large hospitals; but faith seems to have been the chief drug dispensed.

As far as can be ascertained, the real founder of Greek medicine was Hippocrates, who lived from 460 to 375 B.C. Out of the cults of mysticism, superstition and religious ritual this great man went directly to Nature and was the first to grasp the conception of medicine as an art based on accurate observation and as an integral part of the science of man. His greatest contribution to medicine was the art of careful observation and his reliance on the *vis medicatrix nature*, and to surgery *per se* his teaching of cleanliness. Do not forget that for twenty-four centuries the oath of Hippocrates has been the *credo* of our profession. Aristotle, born in 384 B.C., carried on the Hippocratic teaching and became the creator of most of the medical sciences. He also undertook dissection of animals, but not humans, and was the founder of comparative anatomy; his anatomical figures are the first of which we have a record.

After this period very little progress was made until the Alexandrian school was established in Egypt, where science flourished in all its branches; its great medical school was created about 300 B.C. Until then religious prejudice barred dissection of the human body, but in this school permission was given for such study. Herophilus was the first anatomist of note and was responsible for many advances in this subject, describing the valves of the heart, the duodenum, the brain *et cetera*. He it was who made the statement that the best physician was the one who was able to distinguish between the possible and the impossible.

We now pass on to the period of Galen, born in A.D. 130, and the greatest medical practitioner since Hippocrates. His works comprise the most voluminous body of writings left by any of the ancients. He was an observer, an experimenter and a philosopher, who won such repute that his teachings held sway for the next 1,300 years. He described seven pairs of cranial nerves and also the sympathetic trunk, which he thought arose from the trigeminal nerve. He experimented on the optic and oculomotor nerves, sectioned the spinal medulla at various levels, demonstrated aphonia by section of the inferior laryngeal nerves and made observations on cerebral localization through trephine openings. Galen died in A.D. 200, and from then on for some 1,300 years I think Osler's words summarize the position very well:

After flowing for a thousand years through the broad plain of Greek civilization the stream of scientific medicine became lost in the morass of the Middle Ages, when learning became subservient to theology. Following the glory that was Greece and the grandeur that was Rome a desolation came upon the civilized world in which the light of learning burned low, flickering almost to extinction.

The causes for this, although epochal, may be summarized very briefly under three headings: (i) the overthrow of Rome in 410 by the barbarians; (ii) the influence of Christianity, in that knowledge other than that which made man "wise unto salva-

tion" was useless, whereby man in seeking a heavenly home lost his bearings on earth; and (iii) the plague of the sixth century, which devastated the Roman world. However, despite these factors, three main streams of thought persisted in southern Italy, in Arabia and in Byzantium, but were mainly a paraphrasing of the Hippocratic teachings. In the thirteenth century began the rise of the universities, of which those at Bologna and Montpellier are of special interest to medicine, especially the former, since there Mundinius began the study of anatomy and in 1316 issued his book, which was the standard for some 200 years. At Montpellier Guy de Chauliac wrote his "Surgery", the first authoritative work on the subject, and it was he who laid down the four essentials in the making of a surgeon: that he must be learned, expert, clever and well disciplined.

The sixteenth and seventeenth centuries proved momentous for medicine, as in those years the old authorities were shattered, the foundation of an accurate knowledge of the human body was laid down and it was demonstrated how its function could be studied intelligently. Associated with these advances are the names of three great men, Paracelsus, Vesalius and Harvey. Paracelsus (1493 to 1541) is the Luther of medicine. Always a stormy petrel, he stood out boldly for independent study and the right of private judgement. He was the first to stir the pool of mediæval ignorance and he made men think. His actual status is somewhat uncertain, as he has been described as alchemist, quack, rebel, prophet and genius; but that he did exercise a great influence in those days is certain.

Andreas Vesalius, the reformer of anatomy, was born at Brussels in 1514; he was the son of the court apothecary of Charles V and studied under Sylvius (at Paris in 1533), then at the height of his reputation as a Galenic and Hippocratic scholar. Anatomy had degenerated into "an execrable rite", at which careless barber surgeons mangled the cadaver to the accompaniment of an unscholarly reading of Galen. Vesalius imparted his enthusiasm to his fellow students, and they frequented cemeteries and even the execution site in search of human bones which they trained themselves to recognize by touch, and they studied soft parts by dissection of dogs. This zeal for dissection was noted by Vesalius's teachers, and at the third human dissection which he attended he was asked to take the knife and serve as a dissector, much to the chagrin of the barber surgeons.

In 1536 Vesalius conducted a public dissection at Louvain, in 1537 he went to Venice and then to Padua, where he graduated and was immediately created professor of surgery, being just under twenty-three years of age. He gave regular public dissections, at which he called upon his students to assist in lieu of the barber surgeons. He also worked in private; in 1539 he was invited to conduct a public dissection at Bologna, and in 1540 he filled the honoured rostrum of Mondino. In 1538 he published his first book for the benefit of his students; it contained six large plates, which were simply

illustrations of Galenic anatomy, as witness the seven-boned sternum. So far Vesalius was a student of Galen; but a change occurred as his practical experience widened, and he finally concluded that Galen had written his description from animals without direct knowledge of the human body. His observation became sharpened and his zeal for correct illustration redoubled, until finally, in 1543, appeared his great "*Fabrica corporis humani*", of 663 pages with superb engravings on wood, the illustrations being by Calcar, a pupil of Titian. An embodiment of Vesalius's energy, precision and independence, the book became a symbol of intellectual freedom and an inspiration to pioneers in every field of thought.

In the fierce wrangles that followed, led by his old teacher, Sylvius, he gave up his anatomical studies in disgust, burnt his notes in a fit of temper, and became a court physician. Fortunately his pupil Gabriel Fallopius carried on the good work and was his successor at Padua.

Ambroise Paré was in some ways the most influential of the Vesalians, and in his great "Surgery" (1564) he borrowed freely from the "*Fabrica*". By putting it in French he placed Vesalian anatomy in the hands of the barber surgeons so that in one generation there were men all over Europe who had learned to dissect the human body for themselves, and the time was gone when tradition or authority could prevent the advance of human anatomy. Paré was a great military surgeon and revolutionized the treatment of war wounds by substituting the application of simple dressings for that of boiling oil. Moreover, in amputations he ligated the vessels with thread instead of using the iron cautery and caustics. His work on surgery was translated into English in 1634 and became the standard text-book of those times.

By 1600 the skeleton and muscles were clearly known, the viscera and central nervous system understood in their grosser relations, and the blood vessels and nerves traced out, although still frankly perplexing in their functional aspect.

In the sixteenth century impetus was given to anatomy by the fact that the Florentine and Italian artists took up dissection to emphasize the correct delineation and form of the human body. In fact, one of the greatest artists, Leonardo da Vinci, also became a great anatomist, and his drawings were of extraordinary power, being margined with notes and queries of deepest weight.

Vesalius left a great tradition at Padua, where two pupils of Fallopius, Coiter and Fabricius, founded modern comparative anatomy and embryology. The description given by Fabricius of the valves of the veins gave William Harvey, who studied with him, the stimulus which resulted in his discovery of the circulation of the blood in 1628. His "*De Motu Cordis*" completed the revolution in anatomical thought and stimulated an even more intense spirit of investigation in subsequent years, so that the seventeenth century became an age of great advance in gross anatomy. For example, Wirsung discovered

the pancreatic duct in 1641, Wharton the sub-maxillary duct in 1656, Stensen the parotid duct in 1658, and Regner de Graaf in 1664 collected pancreatic juice from living dogs. Later, in descriptions of the liver and intestines, we have the names of Glisson, Peyer and Brunner, whilst Bellini described the kidney and de Graaf gave an exact and detailed account of the reproductive system.

In 1660 the improved microscope was applied to anatomy, and in connexion with this method Malpighi described the structure of the spleen, the kidneys and skin, and Van Leeuwenhock described spermatozoa, voluntary muscle and the blood corpuscles.

The introduction of copper plate engraving allowed the finest details of dissection to be portrayed and grand works appeared, among them, in 1733, Cheselden's "*Osteographia*".

The more or less irrelevant landscape settings and the dramatic postures of skeletons and cadavers in these old folios were due to the fine-arts training of the draughtsmen, and were often skilfully used to balance the composition, conveying a feeling of life absent from our current books.

In the eighteenth century anatomical studies were well established all over Europe, with dissecting theatres and sufficient cadavers for frequent demonstrations as well as osteological preparations and preserved specimens.

Gross anatomy henceforth became chiefly surgical anatomy, and the art of operative surgery developed rapidly, passing out of the hands of the barber surgeon and bone setter into those of the skilled and educated specialists. In France, and later in England, these men learned to perform operations with a technical facility previously unknown. Such operations performed without anaesthetics demanded speed, and this speed had to be based on perfect memorization of anatomy and constant practice in its application. Thus was developed a school of surgeon-anatomists, among whom may be mentioned Cheselden, Scarpa, the Monros and the Hunters, who gave to modern anatomy its characteristics of technical precision, systematic arrangement and topographical approach. These methods brought about a great advance in practical teaching, as evidenced by William Hunter's school, where young surgeons were taught actual dissection on the cadaver.

Cheselden (1688 to 1752) was lithotomist to Saint Thomas's Hospital, and stated that he had "publicly cut for the stone" 213 patients. In the first hundred the mortality was only 6%. In the second series of 113 there were 14 deaths, owing to the fact that "in the early series very few bad cases offered, but latterly the operation being in high request even the most aged and the most miserable cases expected to be cured of it".

The stone was often removed in twenty-four seconds and the operation rarely required more than sixty seconds. A good anatomist and a brilliant

operator, Cheselden wrote but little; yet by virtue of his general education and knowledge he improved the social status of the surgeon very materially, and this position was consolidated by Percivall Pott (1713 to 1788), who followed him. Although Cheselden made his living by surgery, he was throughout his life constant to anatomy. He was the first in England to write on surgical anatomy, thus commencing the long line of surgeons who based their knowledge and technique directly upon anatomy—a line which lasted until pathology gained the upper hand only so late as our own generation. His first book, in 1713, was a great success, on account of several factors: its simple language, the novel manner in which surgical cases were mingled with the dry anatomical facts, its price of five shillings, but chiefly perhaps the beauty and fidelity of its 23 copper-plate illustrations. In 1733 he issued his magnificent "*Osteographia*". His course in anatomy consisted of 35 lectures and paved the way for the Hunterian school and the surgery of the eighteenth century.

Albrecht von Haller (1708 to 1777), of Berne, a contemporary of Cheselden, had a very thorough training in medicine; possessing a studious habit and a wonderfully retentive memory, he not only applied himself to medicine, but took up botany and poetry. He was called to the chair of medicine at Göttingen in 1736 and became a famous teacher. He brought to bear on surgery a profound knowledge of anatomy, a keen-eyed devotion to physiology and an enthusiasm for pathological anatomy. Upon his teachings are based many of the present-day procedures, and his influence on surgery has been profound.

John Hunter founded an important school of surgical thought—a school which continued to advance and improve scientific surgery for at least three generations and whose influence is still felt. He was more than a teacher and surgeon, in that he was a genius devoured by curiosity, full of theories, and above all things desiring to put his theories to the test of experiment.

William and John Hunter each left to the world a priceless memorial of their life's work—William in his collection of books, pictures and anatomical preparations, now housed in the University of Glasgow, and John in the Hunterian Museum of Human and Comparative Anatomy of the Royal College of Surgeons of England. In addition, John Hunter was the founder of a society which later (1907) became the Royal Society of Medicine of London.

I shall not dilate further upon the work or influence of John and William Hunter, Harvey or Lister, as they are known to all of you to some degree, and there are many excellent books available which give details of their lives and their work. Nor shall I deal with those great men of the more recent period who have helped to build up the tradition and practice of surgery, as their names are numerous and their histories available.

I trust that the short historical résumé I have given has brought home to you the great dependence surgery had on the development of anatomy and our great debt to that virile and amazing young man Vesalius, who took such a wonderful part in laying the foundation which the discovery of anaesthesia and then asepsis allowed the building of present-day surgery. Bearing in mind our debt to the anatomists of olden days, I now wish to take you on to the second part of my address and to point out how dependent we are still on the utilization of exact anatomical knowledge in the development and improvement of surgical technique.

Since the advent of general anaesthesia and asepsis surgeons have invaded regions of the body hitherto considered sacrosanct, and it has become incumbent on them to extend correspondingly the detail of their anatomical knowledge. When one considers that it was just over seventy-one years ago that Lister read his first paper applying Pasteur's discoveries to surgical practice, it is amazing to consider the enormous advances that have been made. More has become known in this seventy years of the true nature of disease, its diagnosis and treatment, than in all the previous centuries. During this period surgeons have been forced to extend their anatomical knowledge beyond that of regional anatomy into the realms not only of pathological anatomy but even of microscopic anatomy of both the normal and abnormal tissues. Coincident with this has been the necessity for a proper understanding of physiology; and now we are being forced into the realms of biochemistry and biophysics.

As exemplifying this trend I should like to instance the development of urology and its dependence on the ancillary sciences for a true picture of the inroads that disease has made on the patient, so that the surgeon may determine prognosis and treatment.

Surgery of the chest provides us with another example of the fact that the surgeon must in reality be an operating physician; but perhaps the most striking case is that of cerebral surgery, in which actual diagnosis depends on an exact knowledge not only of the regional anatomy of the brain but of its microscopic anatomy and its radiographic detail, combined with a knowledge of the chemistry and physics of the cerebro-spinal fluid, and even with an intimate acquaintance of the pathology and symptomatology of individual cerebral tumours.

To us 1876 seems to be a long while ago; but in comparison with the historical résumé I have presented it seems but yesterday. Yet it was in that year that David Ferrier published his "Functions of the Brain", and two years later, in the Goulstonian Lecture before the Royal College of Physicians of London, took as his subject "The Localization of Cerebral Disease". Ferrier's facts were obtained by experimental work with monkeys and dogs, but no surgeon utilized them until November, 1884. At that time Rickman Godlee, who

was then but an assistant surgeon at University College Hospital, aged thirty-five years, operated on a man, twenty-five years old, who had been diagnosed by Dr. A. H. Bennett as having "an encephalic growth, probably of limited size, involving the cortex of the brain and situated at the middle part of the fissure of Rolando". The history of Jacksonian epilepsy developing over a period of three years was such as would delight the present-day neuro-surgeons, although the technique employed would sadden their hearts, whilst the time of two hours taken for the operation would probably amaze them. Unfortunately sepsis supervened and the patient died twenty-eight days later.

The surgery of today has become such a complex science that no one man can become an all-round expert, and specialization in many departments has become a necessity, so that present-day students will never see such a brilliant surgeon-anatomist as some of us have been privileged to see in the person of Sir Alexander MacCormick. He came to Sydney originally as a demonstrator in anatomy, and this fact, combined with his extraordinary dexterity and his standing as a pioneer of the then new antiseptic surgery, quickly established a well-merited reputation for him. His knowledge of the details of anatomy, not only the normal but its variations, and his practical application of it to surgery provoked the envy and despair of all who studied his methods and attempted to follow them. In travels through Great Britain and Europe I have never seen a surgeon who could equal his all-round mastery of surgical attack on any part of the body, although individuals specializing on one particular region may have been masters in that special sphere. He made practical use of his anatomical knowledge and was the best exponent of fascial planes and their value in surgery I have ever seen.

This point now brings me to an appreciation of a first-class piece of anatomical study recently carried out by one of our colleagues. I refer to Dr. E. S. Meyers and his description of the cervical fascia, a correct knowledge of which is so essential to any surgeon operating in this area. A detailed account of this work has been published in *THE MEDICAL JOURNAL OF AUSTRALIA*.

In essentials Dr. Meyers's description is based on the fact that every skeletal muscle has a fascial covering and the layers of fascia in the neck are determined by the major muscles they ensheathe. For instance, in the region below the hyoid bone we have the sterno-mastoid fascia—the old superficial layer; beneath this is that layer ensheathing the sterno-thyroid and anterior belly of the omo-hyoid muscles—the sterno-omo-hyoid layer, which runs laterally around the internal jugular vein to become continuous with the prevertebral layer of fascia. Beneath this again is the fascia of the sterno-thyroid muscle, which passes postero-laterally to join the retro-visceral layer which lies on the posterior surface of the constrictors, whilst its deeper layer provides the fascial covering or capsule of

the thyroid gland. These two deeper layers enter into the composition of the carotid sheath.

In operations for goitre one is forced to a realization of these layers, and by a proper utilization of them the operation can be simplified greatly and the skin incision reduced to one which extends merely across the neck to the anterior borders of the sterno-mastoid muscles. Since I have learned to determine and utilize these planes of late years I seldom use more than one small retractor, which is placed inside the sterno-thyroid fascia, and I have seldom found occasion to divide the infrahyoid muscles even in the presence of huge goitres except in malignant cases. The essential things to do are, first, to divide the sterno-mastoid fascia across from the anterior border of one muscle to the other, exposing the sterno-omo-hyoids. Then, if a blunt dissector is pushed upwards on the sterno-mastoid muscle, division of the posterior layer of fascia close to the anterior border of the muscle is made an easy procedure; stripping up of the deep fascia as high as is necessary and wide retraction of the flap are made possible. A similar procedure is followed downwards to the retrosternal space and the lower flap retracted.

Next the sterno-hyoids are separated in the mid-line and the posterior layer of their fascia as well as that of the sterno-thyroids is divided vertically; the thyroid gland is thus exposed within its fascial capsule. Retraction is then made beneath the sterno-thyroid fascial layer and with a blunt dissector the gland can be dislocated forwards, exposure of the carotid sheath being possible. The dissector is next worked up into the top of the funnel-shaped fascial cone beneath the upper pole and dissection is completed by definition of the same fascial plane medial to the upper pole. Ligation of the superior thyroid vessels and their division are then readily carried out; it is then possible to swing the gland forwards and medially to expose the inferior thyroid vessels entering the gland. If the surgeon clamps and cuts well on the true capsule of the gland, hæmorrhage is reduced to a minimum, damage to the inferior laryngeal nerve is avoided and seldom is any damage done to the parathyroids. As a rule these glands seem to lie outside the enveloping fascia of the thyroid, as does the nerve; so by strict anatomical dissection in the fascial planes no damage should ensue other than that due to traction, which is temporary only.

I have noticed in several descriptions for removal of tumours of the parathyroid that they are stated to lie well away from the thyroid gland, and at times it is definitely stated that they were outside the fascial covering of the thyroid, a condition of affairs only to be expected.

When one considers that the thyroid is developed from the region of the *tuberculum impar*, whereas the parathyroids arise in the third and fourth branchial clefts, there is every reason morphologically why they should lie in a different plane from that of the thyroid, just as the thymus does.

The fact that occasionally parathyreoid and even thymus tissue is found within the thyroid gland or close to it is no reason to suppose that this is a normal state and that all such tissue must therefore lie in the same plane; in fact I should regard such a condition as being of the nature of a developmental defect.

I have performed many subtotal thyroidectomies and some one hundred and fifty total ablations of the thyroid, yet any disturbance of parathyreoid function or of the inferior laryngeal nerve is a very rare event.

I would commend this point to Dr. Meyers in his further consideration of the deep cervical fascia.

In the region above the hyoid bone similar considerations prevail, and I know of very few surgical procedures which can be such a pleasing anatomical demonstration as an excision of the glands of the neck performed by a surgeon who knows and utilizes his fascial planes. Conversely, few operations can be such an "execrable rite" and such a tedious procedure if the fascial planes are disregarded.

A similar state of affairs exists with regard to the axilla; and both in this area and in the neck, if one is desirous of completely clearing out all lymphatic glands (as is necessary in dealing with malignant disease), the surgeon must realize that these glands lie in the fatty tissue inside the fascial envelope and cannot be removed efficiently if the fascial space is opened up. The fact that all great blood vessels are enveloped in part of a fascial sheath is also an important factor in surgical technique, and in a skilfully performed operation you will see these great vessels laid bare.

With regard to the axillary fascia the same principle holds good as in the cervical region, and in fact it holds for all parts, since the skeletal muscles are all covered by fascia, certainly weak and ill defined in some areas, but there if looked for.

In order to dissect out an axilla cleanly it is imperative for the surgeon to keep outside these fascial planes. I find that the easiest way to do it is to divide the *pectoralis major* close to its insertion, then to follow the muscle up to the clavicle and detach this part of its origin completely. This now brings us to the posterior layer of the pectoral fascia over the first intercostal space and the danger area of the operation, for the subclavian vein passes just under the subclavius; it is protected only by the coraco-clavicular layer of fascia coming up from the *pectoralis minor*, and the recognition of this is the safeguard in protecting the vein from injury. The fascia over the intercostal space is then incised, and one can gently push it downwards and laterally by pushing the fascia from the lateral thoracic wall and the *serratus anterior*, thus working down behind the sheath of the great vessels.

The sheath of the brachial vessels is opened and the axillary vessels are stripped up to the *pectoralis minor*, which is severed; then the coraco-clavicular fascia is divided and the axillary vessels are exposed

as they pass beneath the clavicle. With gauze over the finger the fascia is then swept off the subscapularis; the pectoral and other local blood vessels are exposed as they leave the main trunks, where they are ligated and divided. Next, the lower border of the axilla formed by the *latissimus dorsi* is cleaned and the fascia at the base of the axilla is divided along the muscle.

The vessels and nerve enter well down on the medial aspect of the muscle, so should not be injured. This manoeuvre then clears away the whole of the glands and fatty contents of the axilla intact in the fascial sheath, which is turned medially along with the pectoral muscles as their costal origins are divided.

A correct anatomical appreciation of fascial planes and their value to the surgeon may be instanced in many other parts of the body, and it is interesting to notice how much easier it is to see and ligate blood vessels piercing the fascia before they are divided. This means a clear field for the surgeon, a saving of blood for the patient, and, in these days of gas anaesthesia, a much steadier level of anaesthesia—a fact often not thought of or one lost sight of, as it is surprising how the anaesthetic equilibrium is upset by any free haemorrhage.

One minor point in connexion with fascial planes is worthy of mention—that is, if you wish to secure a neat linear scar, always be careful to suture deep fascia carefully as well as to secure exact coaptation of the skin edges. Suturing of deep fascia saves any pull on the healing skin incision, which should be made in the line of natural cleavage of the skin as well—a point easily determined by observation of the skin creases or the line of the hair follicles.

No matter how fat the patient is, the line of deep fascia can always be demonstrated in the lower abdominal area if the difference in the fatty tissue superficial and deep to it is noted. It is uncommon to meet any blood vessels of any size between deep fascia and the external oblique, and the fat here is very loose and of a different consistency.

In the limbs most of the major blood vessels likely to need ligation run along the intermuscular fascial planes, a fact which is worthy to be remembered when an amputation is being performed.

Before concluding my remarks I feel that I must pay a tribute to one other surgeon who practised in Australia and who, in my opinion, was also a great exponent of anatomical principles as applied to surgical problems. I refer to the late Hamilton Russell, of Melbourne. His principles as regards the sacular theory of hernia and its application in treatment, and also his teachings as regards fracture of the femur, exercised a great influence. In conclusion I would say that the surgeon of today will enhance the practical application of his art if he recognizes and applies to it the principle of restoration of anatomical continuity as far as is practicable.

GALL-STONES AND THEIR COMPLICATIONS.¹

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THE province of surgery of the gall-bladder till Moynihan of England and the Mayos of America, and others, pointed out the close association of gall-stones with chronic dyspepsia and general ill health from the attendant sepsis, was confined to urgent complications of gall-stones, such as empyema, colic from stones in the cystic common duct, cancer, intestinal obstruction from ulceration into the duodenum, fistulae into the duodenum and colon, and pancreatitis. But we know that remote parts of the body are prey to ills indirectly due to gall-stones, such as affections of the heart, joints, fibro-muscular tissues and the kidneys.

Time will not allow too discursive a talk, as many lantern slides and case examples are to be put before you.²

The occurrence of gall-stones is intimately bound up with inflammation of the gall-bladder, and any discussion of cholelithiasis would be valueless without a full review of the various factors leading to their formation. Apart from the comparatively rare pure pigment stones and cholesterol stones, it is generally assumed that there is an inflammatory basis for all gall-stone formation, and in those cases in which some altered metabolism has been the causative factor inflammation soon follows, with attendant symptoms in its wake.

In their book on the medical treatment of gall-bladder disease Rehfuess and Nelson⁽¹⁾ state:

We now realize that gall-bladder disease is the commonest upper abdominal trouble; 25% of the adult population have gall-stones, 25% have cholecystitis without stones; in fact 40% to 50% of the adult population have disorders of the biliary tract which may at any time give rise to active symptoms.

Ian Hamilton,⁽²⁾ in 1,000 consecutive *post mortem* examinations, made the following observations: (i) gall-stones were present in 106 subjects (10.6%); (ii) there were twice as many females as males affected; (iii) many serious complications due to gall-stones were present, mainly carcinoma and pancreatitis; (iv) cancer of the gall-bladder was present in five subjects, in four of whom gall-stones were present.

Gross⁽³⁾ in 9,531 autopsies observed gall-stones in 802 subjects, that is, in over 8%.

Chirey and Panel,⁽⁴⁾ in a most comprehensive work, quote several authorities, and amongst others Courvoisier, who states that in 16,025 cadavers he found gall-stones in 1,714, or 10.7%.

¹ A post-graduate lecture delivered at Prince Henry Hospital on August 5, 1939.

² Dr. Bullock illustrated his remarks throughout with a series of lantern slides.

Chirey and Panel⁽⁴⁾ quote Poulsen, of Copenhagen, who in 9,172 autopsies found gall-stones in 406 subjects, or 14.75%.

We may therefore take it as proven that affliction with gall-stones is a definite and frequent ailment, even if many disagree with the figures of Rehfuess and Nelson.⁽¹⁾ Long-continued gall-bladder inflammation does not necessarily mean that stones will eventuate, as they are met in certain diatheses only. We find a similar state of affairs in the urinary bladder and kidney, where chronic inflammation may go on for years with no stone deposit.

The most convincing work on gall-bladder infection was carried out by Rosenow.⁽⁵⁾ His work has already been commented upon in a previous paper⁽⁶⁾ as follows:

Extensive and searching experiments on animals by intravenous injections of bacteria with proven affinity for various abdominal organs, for example, the stomach, gall-bladder, duodenum and appendix, demonstrated that he was able in a great percentage of cases to produce inflammation in these organs typical of where they were cultured from, but he was unable to produce cholecystitis by injecting them directly into the gall-bladder. By experimenting with numerous varieties his results showed the streptococcus to be the chief cause of ulcer of the stomach, cholecystitis, appendicitis, pancreatitis, but when streptococci and *Bacillus coli communis* were injected together cholecystitis became very marked.

Wilkie⁽⁷⁾ quotes Illingworth as finding the streptococcus in 50% of gall-bladders removed. Wilkie himself says he was able by experimenting with the streptococcus on rabbits consistently to produce spreading cholecystitis and even strawberry gall-bladder.

From many years of observation and animal experimentation Wilkie⁽⁸⁾ decided that gall-bladder infection was very common, was intramural in type, was probably blood borne, and that the chief infecting organisms were the streptococcus, *Bacillus coli* and *Bacillus welchii*, the last particularly in acute infections with cystic duct blockage.

There are several varieties of stones found—pigmented, cholesterolin, mixed and calcium carbonate. Pigment calculi occur in two forms: (a) in the gall-bladder as biliverdin calculi, which resemble small friable masses like cinders, and (b) in the obstructed common duct as bilirubin stones in small putty-like masses.

Pigmented stones are not laminated, so that when a laminated stone is found in the common duct it is of good augury, indicating that the stone formation is taking place in the gall-bladder and not in the common duct.

The assertion that gall-stones are chiefly found in fat fertile females of fifty-five is an attractive aphorism, but a gross misstatement of fact. Gall-stones may be found at all ages, but occur most frequently in females between the ages of forty and sixty years. Persons of both sexes, of all ages, sizes and shapes, are affected.

Moynihan⁽⁹⁾ wrote on the inaugural symptoms of cholelithiasis over thirty years ago, and his description is as true today as then.

It is of the greatest importance to recognize that the inaugural symptoms due to gall-stones are referred to the

stomach. The patient complains of fullness, weight, distension or oppression in the epigastrium coming soon after meals; relieved by belching and instantly dismissed by vomiting, and dependent on the quality rather than the quantity of food. There is a sensation of great tightness, from which the patient gets relief by bending the body forward and flexing the right thigh on the abdomen or by loosening all garments which fit tightly into the waist. While the discomfort lasts the patient may find it impossible to breathe deeply. There may be a feeling of faintness or nausea, but rarely vomiting, and a sensation of chilliness after meals.

Moynihan⁽¹⁰⁾ also makes the following statement:

Before the surgeon became competent to inspect the gall-bladder little was known of cholelithiasis but its catastrophes. The symptoms caused by stones within the gall-bladder were referred to the stomach, and it was among the descriptions of functional diseases of the stomach that the clinical history of the earlier stages of this condition was to be found. In consequence there started the fallacy, which is being reluctantly abandoned, that gall-stones as a rule cause no symptoms and may often be regarded as silent or innocent.

Having decided, then, that gall-stones cannot exist without inflammation and that they are neither symptomless nor silent nor innocent, we may consider their complications.

What has never been told is what the factor is that suddenly causes a gall-stone to shift and bring about urgent symptoms, requiring perhaps for the first time the help of a doctor; how such huge single stones, having gone through the process of formation and lain dormant and painless for so long, suddenly come to active life; why the one stone of many hundreds decides to pass on and cause distress, jaundice and many other disturbances and leave its fellows in the gall-bladder. No one has satisfactorily attacked this problem. The pain, we must assume, is from distension of the ducts and pressure on nerve endings.

Ian G. Macdonald⁽¹¹⁾ carried out some interesting investigations on the histology of the biliary ducts from sections at various levels through the cystic and common ducts. He found: (i) that muscular coats cease abruptly at the neck of the gall-bladder, sometimes with a sphincter-like structure at the origin of the cystic ducts; (ii) that the common, cystic and hepatic ducts are fibro-elastic tubes lined with a high columnar mucosa, with isolated fibres only of unstriated muscle, needing in many sections the high-powered microscopic fields to demonstrate them; (iii) that the comparatively large glands in the duct walls might harbour metastatic organisms from other septic foci of infection and cause low-grade cholangitis; (iv) that nerve fibres were present in abundance.

If we accept, then, that colic arising in tubular muscular structures is due to muscle stretching, it would seem that the pain of biliary colic is from stretching of the musculature at the neck of the gall-bladder or of the sphincter of Oddi.

In many cases of blockage of the cystic duct with a calculus a mucocoele results, and the gall-bladder may reach enormous proportions and be felt below the costal margin as a cystic tumour. In fact, it is said that gynaecologists laid the foundations of gall-bladder surgery in mistaking such a gall-bladder

for an ovarian cyst. Bland Sutton⁽¹²⁾ mentions a specimen of strangulation of the fundus of the gall-bladder in the sac of a right femoral hernia in Saint Bartholomew's Hospital museum, so such a statement is by no means fantastic.

Sometimes the stone slips back into the gall-bladder, the mucus is discharged into the common duct, and the gall-bladder is restored to its normal size. But more often infection takes place and empyema follows. This may be gradual, but is at times most acute and fulminating. Empyema is accompanied by pain, a raised temperature, nausea and vomiting, often associated with rigors, rigidity and tenderness in the right hypochondrium. Often the gall-bladder condition is overshadowed by a right-sided pneumonia.

Such a patient was transferred to me from the medical wards at Saint Vincent's Hospital in 1920, when I was privileged to be a member of the surgical staff. The patient was treated for pneumonia for ten days and then developed empyema of the gall-bladder. The pus from the gall-bladder and the stools gave a positive result to the test for typhoid bacilli, which disappeared from the stools after the gall-bladder was removed. Typhoid fever had been contracted fifteen years previously.

In some of these cases the lesion goes on to perforation. Three cases of perforation were encountered in five days, one hot February about ten years ago. Many mild cases of empyema exist, characterized by amazingly few outstanding symptoms. In fact, the greater the number of operations carried out on the diseased gall-bladder, the more is it realized what gross disease can exist with so few symptoms. Sometimes ulceration takes place into adjoining structures and the pus is emptied into the duodenum or colon to bring about a natural cure; but in many cases the empyema persists as a fistula between these two organs. Empyemata of gradual onset are often absorbed and the gall-bladder remains as a small thickened and twisted mass, often no larger than a marble, clinging to the liver, colon, duodenum and omentum, but still pouring out a constant stream of poison into the host.

The problem, then, is, what is to be done with the acutely disordered gall-bladder? There has been as much controversy over this question as over "body-line" bowling.

Is it a wise and safe plan ever to leave pus under tension in the human body? Is such a course advisable in any other part of the body? If not, why do so in acute cholecystitis? As the lantern slides presented to you will show, the lymphatics draining the gall-bladder are legion. The shock to the system from absorption of toxins by them must be enormous, and surely, then, it is irrational not to attack the acutely inflamed gall-bladder surgically. "Marking time" before operation to infuse saline solution and glucose is pardonable; but undue delay is culpable. Emphatically, operation should be favoured.

Bland Sutton⁽¹²⁾ states that:

To operate for acute cholecystitis and not remove the gall-bladder is as reprehensible as operating for gangrenous appendicitis and leaving the appendix.

In most cases of acute cholecystitis removal of the gall-bladder is easy, as the inflammatory lymph raises the gall-bladder from its liver bed, facilitating and hastening the work of the surgeon. Exploration of the common duct is generally out of the question, and if pancreatitis is present to any pronounced degree it is better to drain off the bile via the cystic duct, which should not be ligatured. It may be necessary to slit it up.

Results in these cases, if thoracic complications are avoided, are uniformly good and convalescence is quick.

Technique is not being discussed in this paper; but obviously it is wise not to spill the contents of such a gall-bladder nor to aspirate its septic contents. If simple drainage is decided upon, contamination cannot be avoided.

The next most frequent complication caused by gall-stones is their presence in the common duct. F. H. Lahey⁽¹³⁾ states that in 16% to 20% of cases of cholelithiasis common duct stones are present. It is generally assumed that amongst Europeans gall-stones in the common duct have migrated from the gall-bladder. The exception to this, as mentioned before, is the presence of putty-like pigmented stones, found generally in certain states like acholuric jaundice. The common duct stone usually encountered causing grave symptoms is crystalline, the hall-mark of its birth in the gall-bladder, or, as one writer suggests, in the pouches of the cystic duct. It may lie dormant, causing general ill health, liver attacks, shivering attacks, occasional slight attacks of jaundice, and, amazing to relate, there may have been no history of biliary colic.

Like the stone in the gall-bladder, it causes no pain until it becomes incarcerated; then colic and jaundice result. The patient's colour may vary from the canary yellow to the most coppery green.

The presence of stone or stones in the common duct causes dilatation of the common duct and thickening of its walls.

Over a hundred faceted stones have been removed from the common duct of a young woman; the only suggestive symptom of their presence was slight dyspepsia, though six weeks previously there had been a typical history of biliary colic with jaundice; but the fact is that many stones may lie in the common duct and cause no jaundice.

The problem of jaundice is one of the most difficult in surgery. The Van den Bergh test tells us whether it is or is not obstructive, but not whether it is due to stone, to newgrowth or to simple pancreatitis.

A previous history of colic is helpful; but in the end, for a final decision, exploration is demanded.

When to operate? Too long a delay means back pressure on the liver, with disturbance of its functions. On the other hand, the return of slight colouring in the stools tells us that the liver is working, cleaning itself and making the subject the better for operation.

It is wise to drain the common duct always after exploration.

The investigations of Branch, Bailey and Zollinger⁽¹⁴⁾ on dogs showed the dangers of instru-

mental dilatation of Vater's papilla. Yet it is essential to know that the passage to the duodenum is clear and some slight dilatation is necessary.

Now for the consideration of pancreatitis. There is a very interesting discussion on acute pancreatitis reported in *Proceedings of the Royal Society of Medicine*, in which John Morley,⁽¹⁵⁾ summarizing much evidence, concludes that in about 60% of cases of acute pancreatitis gall-stones or gall-bladder disease is present. It is generally believed that the reflux of trypsin into the pancreas is the cause of the acute condition. Probably some degree of pancreatitis is present in all cases of acute cholecystitis. Often a chain of glands as large as almonds is seen leading from the head of the pancreas along the common duct, and a juicy, boggy inflammation is also often found over the head of the pancreas and the common duct. Is it possible to have such obvious manifestations of inflammation around the pancreas without its being affected?

In chronic pancreatitis the gall-bladder must often be saved and turned into the stomach or duodenum, preferably the former.

In acute pancreatitis scarification of the pancreas with drainage of the gall-bladder or removal of the gall-bladder with drainage of the common duct should be carried out. Too many mild cases of pancreatitis are diagnosed in the laboratory from the diastase test, the results being tabulated from there. Surgery still is the correct method of attack in acute cases, which are invariably fatal without surgical intervention.

Fistulae from the biliary tract to the duodenum are diagnosed only at operation. They generally cause intractable indigestion and poor health, with recurring "liver attacks". Removal of the gall-bladder and reconstruction of the intestinal tract are indicated.

Fistulae into the colon are much more serious. Liver deterioration is obvious and bile is generally found in the stools. All the patients met with have been poor risks. The treatment is removal of the offending gall-bladder.

Cancer of the gall-bladder is often the tragic ending to delayed operation for gall-stones.

D. P. D. Wilkie⁽¹⁶⁾ states that:

In 987 operations there were 31 cases of cancer with stones present in every case. In two cases there had been a previous cholecystostomy with recurrence of stones and cancer added.

In "Diseases of the Gall-Bladder and Bile Ducts", Graham, Cole, Copher and Moore⁽¹⁷⁾ make the following statement:

It is a matter of the greatest importance from the standpoint of cancer prevention to emphasize this scarcely realized fact that one person in about twenty-five who have gall-stones will have a carcinoma of the gall-bladder. The mortality rate for operations for gall-stones seems to be less than the risk of cancer.

Intestinal obstruction from gall-stones is generally of a simple variety, occurring in the small intestines, but occasionally it is in the nature of a

volvulus. There is generally a history of previous gall-bladder inflammation, but it may have been some months previously. In the meantime attacks of "belly-ache" have occurred, reaching their climax in obstruction; and by then the history of gall-bladder colic has been forgotten and the diagnosis is made at operation.

My experience of this condition is confined to one case only. But obstruction caused by gall-stones does not always need operation for relief, and the following is a case report by A. R. Neligan⁽¹⁸⁾ in "A Case of Intestinal Obstruction due to a Gall Stone in the Course of which Numerous Stones were Vomited".

Before being seen on August 14, 1914, the patient six months previously had consulted Dr. Neligan for fever and constipation. He found a large tender liver and leucocytosis of 25,000. Operation was advised but was refused. Patient was a large Russian woman. On the present occasion there was a definite intestinal obstruction. Thirty faceted stones were vomited. Operation was again refused and eventually a large cholesterolin stone coated with phosphates, three (3) centimetres in diameter, was passed.

In the words of Neligan:

Gall-stones were vomited into a pan with such force that the sound suggested that a volley of buck-shot had been fired into a metal utensil. The patient passed a stone later while on the bed pan and produced so much noise that she and everyone else were frightened.

The stone was broken with a hammer before Neligan arrived, and he remarks on Nature's making such a successful and determined effort to get rid of a gall-stone.

There are many other rare surgical complications of gall-stones, such as perforation of the common duct, but they must just be mentioned, as time is limited. The remote complications are legion; but none more arresting than those associated with cardiac lesions.

Faulkner, Marble and White,⁽¹⁹⁾ as far back as 1924, noted the occasional similarity between the symptoms of cholelithiasis and coronary occlusion. John Tansey, in 1934, invited my cooperation in a case of diagnosed cardiac deficiency in which treatment in bed had been carried out for twelve months previous to his being consulted. The gall-bladder, with stones, was removed and the patient has been well ever since.

Boyd Campbell⁽²⁰⁾ published an article in 1936 on the influence of gall-bladder and other infections on the incidence of coronary thrombosis. Suffice it to say that many cardiac lesions have been considerably relieved and apparently cured by the removal of a septic gall-bladder.

Conclusion.

In conclusion let me draw your attention to the following points:

1. The birth of gall-stones is nearly 100% in the gall-bladder.
2. There is an inflammatory basis for the formation of most gall-stones, and in those cases in which gall-stones have been thrown out through some

disturbed metabolism, inflammation of the gall-bladder soon follows.

3. There are no such things as innocent or harmless gall-stones.

4. Gall-stones should be removed, and unless there is some definite contraindication the gall-bladder should be taken away at the same time.

5. Examination after an opaque meal, embracing the gullet to the anal canal, should be carried out in every case of gall-stones, and if there is any doubt about the condition of the alimentary tract the meal should be supplemented by an opaque enema.

6. Acute purulent cholecystitis should be treated surgically, as is pus under tension in any other part of the body.

7. There is a definite association of cancer with gall-stones.

8. There is strong evidence that the presence of a diseased gall-bladder has a deteriorating influence on physical well-being and is closely associated with many cardiac lesions.

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Reports of Cases.

A CASE OF BRONCHIECTASIS OF LONG STANDING AND UNSUSPECTED MAXILLARY ANTRITIS.

By R. H. BETTINGTON,
Sydney.

I TAKE the liberty of publishing this case to illustrate the concurrence of upper and lower respiratory infection, which I consider is far more common than is realized.

Clinical Record.

The patient was a female, aged forty-four years, who had been admitted to the Prince Henry Hospital on May 13, 1939, for bronchoscopic examination and drainage. She had been admitted previously on November 22, 1938, and had remained till February 28, 1939, having been treated for bronchiectasis. Examination after lipiodol injection on November 25, 1938, revealed "advanced bronchiectasis in the left cardio-phrenic angle and early fusiform bronchiectasis at the right base". There was no reaction to the Wassermann test.

The patient complained of cough, present since she was five years old, of sputum, varying in amount, of breathlessness on exertion, and of slight nasal and post-nasal discharge. She had had a slight hæmoptysis fifteen years before.

On May 15, 1939, bronchoscopic examination and drainage were performed under local anaesthesia. Both lungs contained quantities of thick mucus; when this was sucked out dilatation and granulation tissue were revealed in the distal bronchi, more pronounced on the right side. Both antra were proof punctured and the fluid returned contained pus. The radiologist's report on May 25, 1939, was as follows: "Some haziness of both antra would suggest pathological condition. Remaining sinuses appear normal."

I advised radical antrostomy; this was performed on June 9, 1939. The membranes lining both antra were found to be polypoid and very fibrous.

The patient made a good recovery, and her cough had diminished on June 16, 1939, when she was discharged from hospital. I fear that slight improvement is all that can be expected, as her condition is of such long standing; but the question arises, would her bronchiectasis have been prevented if her antra had been examined when she was a child?

Acknowledgement.

I am indebted to Dr. L. A. Moxham for these notes.

Reviews.

MODERN ANÆSTHESIA.

"MODERN ANÆSTHETIC PRACTICE"¹ is a welcome addition to the series of volumes that have been published by Messrs. Eyre and Spottiswoode in conjunction with *The Practitioner*. Some time ago *The Practitioner* published a series of articles on anaesthesia. These have been revised and now appear in book form with the addition of a number of completely new accounts of important aspects of anaesthesia. The original symposium has been expanded into a practical manual suitable for the general practitioner in his everyday work.

In the introduction Dr. Blomfield draws attention to the change in the practice of anaesthesia that has taken place

¹ "The Practitioner Handbooks. Modern Anæsthetic Practice", edited by H. Rolleston, B.L., G.C.V.O., K.C.B., M.D., F.R.C.P., and A. A. Moncrieff, M.D., F.R.C.P.: 1938. London: Eyre and Spottiswoode Limited, for *The Practitioner*. Demy 8vo, pp. 231, with illustrations. Price: 10s. 6d. net.

in the last decade, from the simple "rag and bottle" administration to the present complicated and highly mechanized procedures. He shows that many advantages have been gained for the patient by the new methods, in safety, comfort and lessened post-operative complications. He also indicates sources of danger that are consequent on the change, and stresses the difficulties of teaching students simple methods which they will be able to carry out in general practice. The first chapter on theoretical aspects of anaesthesia is a masterpiece of simple and concise explanation. This is followed by a chapter on the use of volatile anaesthetics which should be of great value to the man whose work must be performed with the simplest and cheapest materials. There will be some, however, who disagree with the directions which state "A thickness of about 30 to 40 layers of gauze should be placed on the mask". Ether convulsions are discussed briefly, and it is suggested first of all that it is doubtful whether a case has occurred in which pure ether was used and a good oxygen supply was maintained, and secondly that few anaesthetists of experience have seen a case.

One of the most interesting chapters is that on nitrous oxide anaesthesia in surgery. The advantages and disadvantages are discussed fairly and freely, and the opinion is expressed that for its use in major surgery it is essential for the anaesthetist to have a large experience and that the apparatus be capable of supplying definite and accurate percentages. Cyanosis in gas anaesthesia is considered at length and might well be read by those surgeons who believe that cyanosis and anoxemia are synonymous. It is shown that a cyanotic appearance cannot result unless five grammes of reduced haemoglobin are present in each 100 cubic centimetres of blood. Therefore the very anemic patient may be anoxicemic while pink in colour, whilst the plethoric man may be cyanosed but still have ample circulating oxygen to support the vital functions of the body. McKesson's saturation method is described in detail, and a warning is given that this technique should not be used by the occasional anaesthetist, but should be confined entirely to those who have a large experience of its use and also have a suitable apparatus.

The chapter on basal anaesthesia is a well-balanced summary of the present views on this subject; the benefits and disadvantages are explained. A timely warning is given that basal anaesthesia and heavy premedication should not be used when moist sounds are present in the lungs, whatever their origin. The technique of spinal anaesthesia is fully explained and its indications and contraindications are given. It might have been well if it had been stated that this is a method which gives excellent results in the hands of the experienced, but is better avoided by the man who can use it only at rare intervals. The section devoted to anaesthesia and analgesia in midwifery is long and full, and should be very helpful to the general practitioner. The author asks two questions, as to whether sedative drugs in midwifery are absolutely safe and whether they can be given in everyday midwifery. He states that the answer is "no", with the exception of potassium bromide and chloral and morphine. He considers that a nitrous oxide and oxygen mixture is the ideal anaesthetic for the woman in labour, but, as this requires the services of an anaesthetist, gas and air by Minnitt's method will solve most of the difficulties.

Much good advice is given as to the handling of children who require an anaesthetic. It is considered that all children from the age of two years require some form of premedication, and that "Nembutal" in honey is the most satisfactory drug to use. The list of anaesthetics suggested for the different operations in children at different ages, however, is much more suitable for the specialist anaesthetist than the general practitioner. A combination of nitrous oxide, oxygen and ether given endotracheally is mentioned as the anaesthetic of choice for a baby with a hare-lip; there are probably few general practitioners who have either the apparatus or knowledge of the technique to give this. No mention is made of the "open" oxygen-ether endotracheal method of Ayre, which requires very simple apparatus and is considered by many anaesthetists to be safer than when nitrous oxide is included in the mixture. Probably many anaesthetics for this

condition will still be given satisfactorily with a Shipway apparatus and a pharyngeal tube.

The section on local anaesthesia is concise and clear, but contains a few debatable points, especially in the paragraph concerned with exophthalmic goitre. Here it is stated that "in severe cases local anaesthesia alone is essential", whereas some clinics have found that their results are better with gaseous anaesthetics. Again, the injection of fifteen minims of adrenaline with the local anaesthetic in these cases will be considered to be excessive by many observers. On page 187 there appears to be a misprint; the dose of paraldehyde as a basal narcotic is given as "1 gramme per stone of body weight, with a maximum of 10 gm." Obviously drachm should be substituted for gramme.

Excellent chapters on post-operative care and on risks of explosions complete a very good little book, which may be read with advantage by surgeons and anaesthetists as well as by the general practitioner, for whom it was primarily written.

A TEXT-BOOK OF DERMATOLOGY.

Forty years ago there appeared the first edition of "An Introduction to Dermatology", by Sir Norman Walker.¹ We are glad to welcome the tenth edition (1939), still under the authorship of Sir Norman Walker, but in collaboration with Dr. G. H. Percival. The edition under review has been revised to a very late date; for example, the treatment of pellagra by nicotinic acid is described. The work is an excellent example of the thoroughness of the Edinburgh school.

There is probably no text-book in the English language from which the general practitioner will derive more sound advice and help in the diagnosis of the commoner dermatoses. The wealth of detailed treatment made available will be of great value to those faced with the dermatological problems of general practice. The coloured plates, 102 in number, deserve special praise. They are derived from a series of superb moulages and are more life-like than those appearing in most text-books. They have been well selected to show the more usual phases of the various dermatoses. Wisely, no attempt has been made to detail X ray and radium therapy.

The section dealing with *dermatitis medicamentosa* does not mention or describe the eruptions which are frequently seen as the result of the exhibition of drugs of the sulphanilamide group.

Dermatitis, the commonest of all skin disorders, is most adequately considered. The lines of treatment suggested for its varying types and stages will be found most helpful.

A useful note on the method of performing patch tests is given. Tinea infections, now so much to the fore, are given full description. It is interesting to note from a graph shown the fall in the incidence of tinea of the scalp in Edinburgh. This is in line with Australian experience also. One of the most useful of modern methods of treatment, namely, the occlusive strapping dressing for impetigo, is not described.

As might be expected in a Scottish text-book, *Impus vulgaris* comes in for a large amount of space. For the Australian practitioner this will be of academic interest only.

A full description of rodent ulcer is given, and it is interesting for Australians to note the author's statement that, in order to stress early diagnosis and treatment, "we have given to this disease an amount of space which may to some less familiar with it appear disproportionate to its frequency".

The typography and paper are excellent, and a full and accurate index is provided.

¹"An Introduction to Dermatology", by N. Walker, Kt., M.D., LL.D., F.R.C.P., and G. H. Percival, M.D., Ph.D., F.R.C.P.; Tenth Edition; 1939. Edinburgh: W. Green and Son; Australia: Angus and Robertson Limited. Demy 8vo, pp. 408, with illustrations. Price: 30s. net.

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EXAMINATIONS AND EXAMINERS IN MEDICINE.

PROBABLY no subject in medical education has given rise to more controversy than examinations as a test of knowledge. This controversy has not been confined to medicine; it has attracted the attention of university teachers in every country and in every sphere of learning. But in medicine the test of knowledge assumes a peculiar importance, for the examinee who receives the approval of his examiners and goes out into the world, has in his hands the health, the happiness and often the very lives of men and women. Medicine is both a science and an art. Knowledge of the science may be gained by steady application to the written and spoken word and by observation and experiment in the laboratory. Proficiency in the art is not so easily acquired; it follows upon experience, and is based on exercise of the critical faculty and an understanding of human nature in both the conscious and subconscious spheres. Evidence is

not lacking that many persons today, even in what are regarded as high places, think that the medical student at the moment of graduation should be skilled in both the science and the art of his calling. While all their fuss and pother are irritating to those who are charged with the duty of teaching medical students and of determining whether they are fit to practise their profession, the irritation may not be without value—it is impossible under the action of an irritant either to be complacent or to remain in a rut. All the same, these people should be made to realize that the education of medical students and the criteria by which they are judged in their final examinations are constantly being considered by medical teachers and university authorities.

Though it is often stated that an examination is not a real test of a candidate's knowledge, some form of test is obviously necessary, and those opposed to examinations are at a loss to find a substitute for them. In days gone by the apprenticeship system served a useful purpose in the training of medical practitioners; but with the advance and the growing complexity of medical knowledge its supersession was inevitable. At the same time it is interesting to note in passing that the apprenticeship system is being reintroduced in a new form in post-graduate training of surgeons. Examinations for qualification in medicine will remain, and we must recognize that their value as a criterion of knowledge depends not only on the method adopted, but also on the ability of persons chosen as examiners. Reference to this subject is appropriate for two reasons. In the first place, Sir Alan Newton, in his recent Bancroft Oration, had something to say about incompetent examiners; and, secondly, the students of medicine at the University of Sydney have recently thought it their duty to protest against ambiguity and obscurity in questions asked at examinations.¹ The students state that not infrequently they do not understand what the examiner means by his question. They have sometimes been "confounded by terminology and blinded

¹ Sydney University Medical Journal, June, 1939.

by obscurity"; as a result "some students wail and others fail". A senior university professor has recently expressed the opinion that occasionally, in spite of all precautions, ambiguity will creep into a question. In these circumstances the student's course is clear. He should write: "This question appears to me to be ambiguous; it might mean either 'A' or 'B'. I take it to mean 'A'." If the question really is ambiguous and he proceeds to discuss "A", no fair-minded examiner will penalize him, although "B" was intended. After all, the object of an examination is to discover how far the student has succeeded in an effort to master his subject and not to trip him up on a technical point.

In a recent discussion in these pages on medical education reference was made to Sir Alan Newton's statement that much of the criticism levelled at the examination system should be directed against unskilled examiners "who bring the system into disrepute by setting stupid papers and asking ambiguous questions". We suggested that it would be useful and possibly revealing if universities were to examine proposed examiners on their suitability to act in such a capacity before they were allowed to undertake the task. It is unfortunately true that some examiners, particularly in clinical subjects, have not had a great deal of experience in the conducting of examinations. Before an examination paper is put before students it should be subjected to the most careful scrutiny by more than one person in addition to the examiner who drafted the questions. In some schools this is always done, and we have it on good authority that obscurity and ambiguity are not infrequently discovered. Before an oral examination the several examiners in a subject should meet and come to some agreement on the type of questions to be asked and on their scope. No other course is fair to the examinee, and by no other means will it be possible to determine the relative merits of different students. Reference to this subject should include a discussion on systems of marking and on the basis for their elaboration. Mention should also be made of the conference of

examiners which undertakes careful scrutiny of the replies of candidates just above and just below the pass line. Such a conference, we understand, is usually held; if not, it should be.

Australian medical schools would be brought closer together and the teachers in the several schools would be stimulated to fresh endeavour if a system of exchange of examiners was inaugurated. This is done in many centres in England; the head of a department is allowed to choose from another school an examiner who acts with him. The visiting examiner receives a fee for his services, and the dates of examinations are arranged so that an interchange is made possible. At the present time the medical schools in Australia lead much too self-contained an existence; the benefit which would follow the appointment of inter-university examiners would far outweigh the expense involved in such an arrangement.

Current Comment.

WOUNDS OF THE HAND.

THE papers by Aspinall and Teece published in this issue, and the account of the discussion which followed their reading at a recent meeting of the New South Wales Branch of the British Medical Association, should receive the earnest attention of all medical practitioners who have to deal with wounds of the hands. The importance of the subject has been well emphasized by Aspinall, who points out that in many hospitals the least experienced member of the resident medical staff is often responsible for the treatment of wounds of the hand. This state of affairs is more deplorable when suppuration has occurred and sepsis is spreading in the hand in the insidious fashion which is its wont. For this reason full approval will be given to the resolution adopted by the meeting that the attention of the medical boards of the metropolitan hospitals should be called to "the necessity for providing adequate surgical facilities for the treatment of patients attending with injuries or infections of the hand and/or fingers". This resolution, however, should not be applicable to the metropolitan area of Sydney alone; similar steps might well be taken in other capital cities and large centres. The resolution is therefore commended to other Branches of the British Medical Association

in Australia, to subdivisions of Branches and to local associations of members in large centres.

Attention must also be drawn to Aspinall's conclusion that "the affected part must be elevated and kept at rest at all times, not intermittently". Light is thrown on this aspect of the subject by a paper entitled "Mechanical Principles in the Causation and Treatment of Disease", from the pen of Fay Maclure, of Melbourne, which appeared in the July, 1939, issue of *The Australian and New Zealand Journal of Surgery*. This is a stimulating contribution. Maclure points out that life connotes activity and movement and is dependent for its maintenance upon an efficient circulation. Stasis, on the other hand, he holds, signifies a state which is almost the opposite of life and living—a mere existence, stagnation, inertia, inactivity, atony—and is the result of impeded or failing circulation. He devotes particular attention to the veins and lymphatics and to their valves; he also discusses muscular movements and gravity as they influence the circulation. In regard to infections of the hands he writes:

Gravity is frequently misused in the treatment of infections of the hands and fingers. The circulation of the limb is considerably enfeebled by the enforced inaction of muscles, but there is no need to embarrass it further by requiring its blood and lymph to flow up hill. The spectacle of an ambulatory patient entering a casualty department carrying a blue pudding-like hand in a sling at his side is a reproach to surgery—it is the victim now of the violence of gravity abused rather than of sepsis. It cannot be expected that the natural reparative powers will act to their full extent in a hand sodden with lymph and asphyxiated with venous blood. Elevation of the limb above the heart level will at least induce a better circulation and contribute to repair.

These considerations make it clear that the "adequate surgical facilities" referred to in the New South Wales Branch resolution include the provision of beds for the treatment of patients suffering from severe injuries to or infections of the hands. Possibly this will not be a pleasant prospect for hospital authorities, who, as it is, are often hard put to it to find beds for patients suffering from conditions which appear to be more serious than hand injuries or infections. But the hand is indispensable to most human occupations and the question will have to be faced. The majority of patients with severe lesions of the hand are insured under some form of compensation act; and if the provisions of the act are not sufficient to cover the whole cost of treatment in hospital beds, the acts should be reviewed. The manual worker must receive adequate treatment and not some inefficient makeshift.

The repair of severed tendons in the hand has given rise to a great deal of controversy. The first requisite for anyone who sets out to repair tendons is a knowledge of anatomy. This knowledge must be detailed and exact, and must be combined with a technical skill of the first order. Given these prerequisites and an understanding of the principles of tendon suture, there should be very little trouble. The principles of tendon suture have been recently

set out very clearly by J. H. Couch.¹ Couch begins by stating that there are 29 tendons and muscles in the hand and that division of any one of these will impair its efficiency. He also adds that a tendon which is properly repaired will yield practically 100% function. To be successful in the repair of a divided tendon, a surgeon must, in Couch's opinion, recognize the divided tendon; repair it, repair it so that it stays repaired, and make it move. In the recognition of a divided tendon it is most important to examine the hand and not the wound, and Couch states that, since every tendon has a job to do, if the job is not being done it should be assumed that the tendon is divided until it can be proved to be intact. This is sound advice. In the suturing of tendons Couch is insistent on the use of silk, and only strong braided silk has a sufficiently high tensile strength to be of any use. He also reproduces a diagram to show how silk may be inserted into a divided tendon so as to unite the ends in an end-to-end fashion without producing thickening or interfering with the subsequent sliding. In order to make the tendon move, he is opposed to the use of splinting.

In his paper Teece made some dogmatic statements to which exception was taken by D. J. Glissan. Teece's experience has been different from that of others, particularly in cases in which the point of division of a tendon has been within the tendon sheath. His views also differ from those expressed by Couch on suture material and the use of splints. To accept Teece's gloomy outlook on the suture of tendons in tendon sheaths would be to adopt an attitude of despair, and, on the evidence of many other surgeons, this would not be justified. Couch's argument for the use of silk is sound. He points out that catgut is soon absorbed, and also that, since it is an absorbable material, catgut calls forth a vigorous cellular reaction to absorb it; silk does not call forth such a cellular reaction and is therefore not so liable as catgut to be followed by adhesion. Teece claims good results with catgut, but he is doubtless careful in his use of splints. It is not clear whether Couch dispenses with splints entirely, though it would appear that he does. He states dogmatically that the use of splints is almost certain to result in loss of movement. He adds that "to suture a tendon and then to splint it for five weeks, as is often taught, is to make sure of failure". With the last statement we agree; but splinting will be used by most surgeons, though with discrimination and in conjunction with physical therapy measures.

SUPPURATIVE PERICARDITIS.

In 1933 Truesdale collected from the literature no less than 152 cases of suppurative pericarditis in which pericardotomy had been performed. The recovery rate for all these cases was 58%, but it was observed that the results were better in the

¹ *The Canadian Medical Association Journal*, July, 1939.

more recently reported cases, owing no doubt to increasing experience and improved methods of treatment. Osler, referring to the same condition, has stated that "probably no serious disease is so frequently overlooked". Norman M. Guiou, in writing about septic pericarditis and its surgical treatment, makes these significant quotations and further points out that *post mortem* evidence indicates how seldom the diagnosis of a purulent pericardial effusion is made in fatal cases of pneumonia.¹ In the Philadelphia General Hospital 146 cases of pericarditis were discovered at autopsy in ten years; only 4% of these had been diagnosed, and operation had been carried out in only three instances. Guiou publishes the notes of a case in which operation was carried out successfully, the patient making a good recovery. The patient in question was a boy, aged nine years, who was under treatment for osteomyelitis. Staphylococcal pericarditis occurred as a metastatic complication, but early diagnosis was fortunately made and drainage was carried out through the so-called "triangle of safety", portions of the fourth, fifth and sixth costal cartilages being resected. It is interesting that attention to the child's symptoms led to the diagnosis. A night nurse reported that he complained of abdominal pain, and later on of pain in the chest and abdomen, and on the following night she noted that pain was experienced when the boy was turned on his side. Examination of the heart on the following day revealed the presence of a friction sound of the to-and-fro variety. Another significant symptom was observed by the nursing staff in this case—cough when the patient was turned in bed. This is, as Guiou points out, the cough of pericarditis due to pressure on the respiratory tree, to which Osler refers.

It is curious to observe how certain trends of medical investigation and research, while illuminating strongly some fields in medical science, tend at times to lead to an obscuring and consequent neglect of others. Recently a renaissance of interest in the heart sounds is noticeable, as Ellis Murphy has pointed out in these pages, and it would be well if this revival brought pericarditis into greater prominence as a clinically recognizable condition. The published figures show that empyema of the pericardium is not of necessity fatal; it certainly carries with it a high mortality rate, but it is not right to consider this lesion as a purely terminal one. Guiou separates into two groups the cases in which the diagnosis of suppurative pericarditis may be missed: the first those of cases in which some serious suppurative disease is under observation, where the obvious local and general symptoms distract attention from a possible pericardial focus, and the second those of cases in which there are associated lesions in the chest, especially pneumonia. He rightly observes that radiological evidence is often very difficult to interpret in these cases, particularly when the lesion affects the left side of the chest. Perhaps the modern attitude to the

operative treatment of *empyema thoracis* is partly responsible for the comparative neglect of pericardial suppuration. At one time an empyema was thought of almost as a surgical emergency: "*ubi pus ibi evacua*" was the motto. As bacteriological knowledge grew, it was found, however, that operation was best deferred for a time in certain cases, especially the streptococcal, until the exudate was thicker and until the mediastinum was less dangerously mobile. Of course, the importance of aspiration has been recognized, for this temporary measure will relieve pressure and lessen absorption; but because operation is not necessarily immediately carried out when an empyema is discovered, there is no reason in the world why its presence should not be earnestly sought so that it might be discovered as early as possible. In this way perhaps a feeling has grown up that a little delay does not matter in this question of empyema in pneumonia, and this attitude has insensibly affected the clinical attitude towards pericarditis. Guiou's article reminds us that the pericardium is not one of the untouchables, and we may well strive to improve the depressing mortality statistics of this serious disease. He also deals with the matter of the surgical approach. The method he employed, incision to the left of the sternum at the level of the fourth, fifth and sixth costal cartilages, is the classical approach; but he points out that there is much to commend the epigastric subdiaphragmatic method. One small point of interest in his case was the freedom with which air was sucked into the pericardium through the wound. This surgical demonstration of the role played by the intrapericardial vacuum in filling the auricles serves to emphasize the desirability of relieving the heart of the pressure of an effusion, quite apart from the need of draining a collection of pus in such dangerous proximity to the heart muscle.

REGIONAL COLITIS.

It is difficult to decide how much time should be taken up in the consideration of comparatively rare diseases. It is only a very skilful diagnostician who can bear them all in mind and at the same time maintain true perspective and balance. Regional ileitis and colitis must be rare diseases in this country, yet the same opinion was once held in America, where many cases have been reported in recent years—enough perhaps to arouse mild scepticism in some minds. It is hard to understand why it is only recently that so many instances of a condition with such an interesting and obvious pathology should have occurred. It is not a new disease; the first case was reported before the Royal College of Physicians of London in 1806 by Combe and Saunders, while further mention was made by John Abercrombie in 1828. The impressive title of "Combe-Saunders-Abercrombie-Crohn's disease" has been suggested.

¹ The Canadian Medical Association Journal, August, 1939.

Crohn described the condition as one occurring only in the small bowel, but since then has published cases occurring in the colon. Recently a paper was read before the Boston Chapter of the National Gastroenterological Association of America by Dubins, who has already seen five cases of regional colitis. He considers that it is difficult to separate this lesion from acute or chronic non-specific ulcerative colitis, as it may be a regional form of the latter.

No age or sex is immune from the disease. A number of causative organisms have been suggested, including streptococci, *Bacillus coli communis*, dysentery bacilli and even amœbæ. The mucous membrane of the colon is the seat of ulcers, which vary in diameter, depth and induration. Large areas may be involved by their coalescence. The ulcers may be of sufficient depth to result in perforation or fistula formation, depending on the absence or presence of chronic peritoneal involvement with adhesions. The edges of the ulcers are thick and indurated, and the contraction of the scar tissue results in distortion of the lumen; but complete intestinal obstruction does not follow. Microscopic examination shows that all the coats of the bowel are involved in an inflammatory process, which is characterized by a widespread infiltration of an oedematous chronic granulation tissue, containing fibroblasts, lymphocytes and polymorphonuclear leucocytes. The most remarkable feature of the disease is the contrast between the gross appearance of the lesion and the mildness of the symptoms. The latter are of such a character that chronic appendicitis is the commonest preoperative diagnosis, according to the accounts which have been published up to the present. Irregular abdominal pains are experienced, sometimes severe, usually felt immediately before and relieved by defæcation. They are also irregular in their distribution. The character of the pathological lesion might be expected to cause intestinal obstruction, but diarrhoea is a common finding. The stools may number twenty each day. In those cases in which the rectum is the seat of the condition tenesmus is often experienced by the patient. In some instances there is a great loss of weight; but during the remissions, which are a common feature, the general condition may considerably improve. For this reason the physical condition of the patient will depend on the duration of the disease and the stage at which the patient is seen. The temperature varies from normal to 102° F. Occasionally there is a secondary anæmia; but this is not due to frank hæmorrhage, which is rare. Occult blood is frequently found in the fæces. The white blood cell count presents no diagnostic feature. Tenderness may be elicited anywhere along the course of the large bowel, but the chronic inflammatory mass is rarely palpable. Rectal or sigmoidoscopic examination reveals no abnormality, except when those sections of the gut are involved in the regional inflammation. The X ray appearance following a barium enema is sometimes, but not always, of

assistance in the determination of a diagnosis. Blurring of the outline of the colon in the early stages and narrowing of the lumen in the later stages are the usual findings.

Dubins devotes a section of his paper to differential diagnosis. He commences with regional ileitis, the clinical picture of which does not seem to differ greatly from that of the corresponding condition in the colon. It would be imagined that the disease which most closely resembles regional colitis is chronic ulcerative colitis. This is not mentioned in the paper under discussion. The differentiation between the two conditions is of fundamental importance from the point of view of treatment. For a similar reason the localized inflammation must be distinguished from carcinoma. The diarrhoea which sometimes occurs with colonic cancer is not as pronounced or as constant a feature as in regional colitis; on the contrary, the common symptom is intermittent or complete obstruction occurring in a person whose bowel action has been previously regular. The nature of the pain and the associated diarrhoea are not suggestive of chronic appendicitis, though, as K. St. Vincent Welch recently reminded readers of this journal, a recent appendicectomy scar has been described as a frequent "physical sign" in Crohn's disease. Numerous other diseases have been mentioned as likely to cause confusion, but their consideration is merely theoretical.

The small number of cases recorded and the obscure ætiology would render dogmatism regarding treatment impossible. Medical treatment has been tried, but is not looked upon with great favour. It consists in the improvement of the general physical condition of the patient and an endeavour to treat any possible specific cause, for example the administration of appropriate serum or vaccines in cases in which dysentery or typhoid bacilli have been found, or the supplying of those vitamins which are lacking from the diet. These measures are said to be justified if they are aimed at preparing the patient for operation. It would seem that, once the diagnosis of regional colitis has been established, radical surgical treatment is the only sure way of restoring the patient to health. A resection of the bowel is the procedure of choice. The extent of this will vary according to the site of the lesion. No mention is made by those who suggest it of the enormous risks which must be taken in the resection of large bowel in the presence of inflammation, especially when the part to be removed is adherent to surrounding structures. In this journal, in the issue of June 3, 1939, J. C. Bell Allen reported two cases of regional ileitis, "illustrating the acute phase of the disease in two distinct localizations". He advanced the view that conservative treatment was reasonable, since spontaneous recovery had been noted. He admitted that in his two cases the interval of time since treatment had been commenced was short, but held that conservatism had been justified.

Abstracts from Current Medical Literature.

DERMATOLOGY.

Symmetrical Eczema of the Nipples.

ROMAN LESZCZYŃSKI (*The British Journal of Dermatology and Syphilis*, July, 1939) describes with the aid of case records the not uncommon condition of bilateral eczema affecting the nipples and areolae in young women. After a brief review of the use of the terms dermatitis and eczema in general, he proceeds to discuss the close physiological relationship between reactions occurring in the female internal genitalia and those occurring in the breasts. In connexion with the actual disease of the breasts, the author, after enumerating several case histories, traces the dermatosis from its earliest manifestations and discusses some related phenomena. He points out that the condition commences as a subjective one, itching or mastodynia being frequent early complaints. Followed by rubbing or scratching, this leads on to the fully developed lichenification of the nipples so resistant to treatment. The disease is always associated with a dysfunction of the female genital tract, either primary or secondary to disease of the adnexa, that is, ovarian dysfunction, primary or secondary; dyspituitarism may also occur. Consequently fluctuations, either cyclic (menstrual) or related to exacerbations of pelvic inflammation, are a feature. The disease is limited only to the nipples and areolae, and may be at first limited to one side, when a diagnosis from Paget's disease must be made. In several instances a definite connexion with Fox-Fordyce disease of the axilla is noted. It is pointed out how close is the connexion between the axillary apocrine glands and the female genital system. In the treatment the author emphasizes the search for and correction of internal genital defects, whether endocrine or inflammatory, and the institution of regular substitution hormonal together with local therapy.

Cryotherapy for Acne and its Scars.

FLORENTINE L. KARP, HARRY A. NIEMAN AND CHARLES LERNER (*Archives of Dermatology and Syphilology*, July, 1939) describe a form of treatment for acne by means of a mixture of carbon dioxide snow, acetone and precipitated sulphur. The apparatus, method of mixture and technique are stated in detail, and the theory of action is discussed. The duration of treatment in the authors' series varied from a minimum of six weeks in mild states to eight months for severe scarring following acne. Over 90% of the patients were appar-

ently cured or much improved within four months. The authors stress the importance of the production of a mild and superficial reaction only, and issue a warning against repetition of the treatment until all signs of the previous application have subsided. Two contraindications are particularly stressed: any sign, however slight, of skin atrophy following previous X ray therapy, and, of still more importance, the presence of a melanotic nevus within or near the treated area. The authors consider the treatment particularly suitable for the acne of puberty.

Lymphocytoma of the Face.

F. F. HELLIER (*The British Journal of Dermatology and Syphilis*, June, 1939) describes a case of lymphocytoma of the face in a woman, aged sixty-five years. He discusses the literature concerning the condition, and the aetiology, classification of clinical types and histopathology. Features of the case history of the patient discussed were the onset very rapidly after an injury received two years previously, distribution of lesions confined to the face, absence of any abnormal blood change and, microscopically, the presence of lymphocytic infiltrates with germinal centres comprising the lesions which appeared as pinkish, semi-translucent nodules on the nose and face, somewhat resembling rhinophyma. The aetiology is unknown, but most authors consider the lesions to arise from preexisting lymphoid deposits in the skin. There is no disturbance of general health, no splenomegaly or lymph gland enlargement, and no evidence of tuberculosis as a causative factor. The prognosis is good, the condition responding to X rays or arsenic. Epstein makes the following classification of the disease: (i) disseminated papular, affecting the face (this case); (ii) isolated tumours, especially of face and ear, rarely the extremities; (iii) circumscribed lymphoid aggregations of the scrotum (Kaufmann-Wolf); (iv) lymphatic skin disease of the external genitalia (Lipschütz); (v) miliary lymphocytoma. The weight of evidence suggests an inflammatory cause rather than a neoplastic one.

Treatment of Fungous Infections by Iontophoresis.

In a preliminary report published in *The Journal of the American Medical Association*, April 1, 1939, Howard W. Haggard, Maurice J. Strauss and Leon A. Greenberg describe a method for the treatment of fungous infections of the hands and feet by ionization with copper. They first describe carefully controlled experiments with rats, in which it is proved that the copper ions penetrate the tissues, and in which the amount of copper is estimated chemically. The apparatus used and the details of treatment are described in some detail. Copper electrodes are used.

The solution at the negative pole is saline solution, while for the active positive electrode 0.2% copper sulphate solution is employed. The duration of treatment is twenty minutes; the current used is four to six milliamperes for one hand or foot, or eight to ten milliamperes when two are treated simultaneously. To obviate unpleasant shock due to the patient's removing the limb from the solution during treatment a special circuit is described. Adequate preparation of the affected part before treatment is stressed. The authors recommend that the part should be soaked for a few minutes in dilute sodium hypochlorite solution. The results of treatment given to thirty-seven patients are described and tabulated under numerous headings. The best response was seen in the vesicular and bullous types. A clinical cure was obtained in 70% of cases. The average number of treatments given per patient was six. When possible two or three treatments were given weekly. Finally the authors stress the preliminary nature of the report, but describe some brief controlled work to support their claim that the clinical cures result from the action on the fungi of the copper ions driven through the skin by the action of the current.

UROLOGY.

Operation for Relief of Urinary and Faecal Incontinence.

O. S. LOWSLEY AND R. W. HUNT (*The Journal of Urology*, February, 1939) describe a new procedure for the relief of incontinence of urine and faeces in cases of *spina bifida, et cetera*. They point out that the first approach to this problem should be neuro-surgical, and they advise their operation only when the neurological surgeon fails. Technically the operation consists of two stages, which are carried out through an inverted Y incision extending from both sides of the anus upwards onto the perineum. Urinary incontinence is controlled in the manner previously described by Lowsley by plication of the bulbous portion of the urethra with ribbon chromicized gut. The rectum is then similarly treated, three sutures being placed in the posterolateral aspects of the rectal wall and tied on the ventral aspect. This produces considerable narrowing of the flaccid organ. At first much pressure is needed to produce evacuation, but subsequently good control is obtained. Two children have been treated successfully.

Atrophic Kidney.

G. MARION (*Journal of Urology*, January, 1939) defines an atrophic kidney as one which, from some cause or other, is definitely reduced in size and is usually so altered anatomically that the renal efficiency is seriously

diminished. Apart from trouble which may arise from such changes, renal atrophy imposes serious difficulties when any question of operative interference with the opposite kidney arises. It is therefore important to recognise renal atrophy in order to avoid disaster if the opposite organ requires treatment. One type is simply congenital, consisting of an arrest of development; but the more common type is acquired and results from an infective origin, more rarely from an infarct. In the latter cases the atrophy is only partial. Microscopically, fibrosis is the predominating feature, and the organ gradually shrinks in size. Renal atrophy may be symptomless, and when symptoms are present they present nothing of a characteristic nature. Lumbar pain, not colicky but continuous, and tending to be worse at night, is a common symptom. Pyuria is almost always present, and occasional hæmaturia may occur. The history as a rule is of long duration, with febrile renal attacks; or else renal lithiasis, for which previous operation or treatment has been required, may be a feature. At the examination a characteristic finding is renal deficiency, associated with a fairly normal retrograde pyelogram, or there may be a small pelvis with a diminution in the number of calyces. Nephrectomy is the only useful treatment.

Cystoscopic Extraction of Ureteric Calculi.

LUDWIG ZEISS (*Zeitschrift für Urologie*, March, 1939) presents a new method for the extraction of calculi from the ureter by means of an ordinary ureteric catheter, which is looped at the end so as to snare the stone and allow it to be dragged downwards. For many years the author had been disappointed with the results obtained by dilatation with single or multiple catheters, the use of multiple silk threads attached to a catheter, and the numerous forceps and other metallic instruments designed for this purpose; indeed the latter types possess the grave disadvantage of being likely to injure the wall of the ureter. With the new method all that is required is that a small ureteric catheter shall pass up the ureter a little beyond the stone. A fine silk thread is attached to the tip of the catheter, and it passes back through a small foramen in the wall of the catheter about five centimetres from the tip. This thread then runs right through the catheter, to issue at the other end. When it is pulled on by the operator the tip of the catheter bends over and touches the foramen, so forming a loop. This loop is prevented from kinking or collapsing by an elastic inlay placed where the fundus of the loop comes. The loop catches or snares the stone, so that the latter is pulled downwards when the catheter is withdrawn from the ureter. The author claims that this is the simplest, safest and most efficacious

method yet proposed for the extraction of ureteric calculi. So far he has extracted 127 ureteric calculi by this method, some of them being up to two centimetres in length and one centimetre in width.

Bladder Neck Obstructions.

G. MARION (*La Presse Médicale*, July 12, 1939) raises the question whether transvesical adenomectomy or endoscopic resection is the operation of choice in the treatment of bladder neck obstructions. The term "prostatectomy" should not be used, as we now know that the commonest type of so-called hypertrophy is an adenoma or overgrowth of the periurethral glands which lie proximal to the *colliculus seminalis*. Perurethral resection is too new a method for its value to be determined. Study of remote results yet remains to be carried out before mature judgement can be delivered. Nevertheless, endoscopic resection is an excellent and benign operation for suitable patients. It can be considered as the operation of choice in: (i) small adenomata, especially when characterized by a median lobe or by a bar between two lateral lobes; (ii) moderate or large adenomata, of firm consistence, in very aged patients of low resistance; (iii) in young resistant subjects, in whom no complication has yet occurred, but who are worried by dysuria, frequency of micturition *et cetera*. On the other hand, transvesical adenomectomy should be preferred: (i) in very large adenomata; (ii) in moderate-sized adenomata in younger subjects, in whom residual adenomatous tissue might develop later and give trouble following endoscopic resection; (iii) in voluminous, soft, infected or very congested adenomata; (iv) when there is a definite indication to open the bladder to ameliorate the renal condition, to clean up the bladder or to deal with a coexisting lesion. Nevertheless resection may often be practised after a period of drainage. The author concludes that it is illogical to adopt one of these operations to the practical exclusion of the other.

Vitamin C and Essential Hæmaturia.

C. E. BURKLAND (*Journal of Urology*, March, 1939) submits the thesis that essential hæmaturia is a result of increased capillary permeability in the kidneys and that this is due to a defect in the intercellular cement substance in the capillary endothelium, permitting the blood cells to migrate through their walls with comparative ease. An increase in the ascorbic acid content of the diet increases capillary resistance and prevents the mechanical weakness of the capillary walls which causes hæmorrhage. Four cases are cited in which complete urological and hæmatological studies failed to reveal any cause for the persistent gross hæmaturia from which the patients suffered. In each case dramatic control of hæmorrhage was demonstrated

by the intravenous administration of vitamin C in the form of the sodium salt of cevitamic acid in sterile water. Lacking any guidance in the matter the author arbitrarily varied the doses from 100 milligrammes of vitamin C on two consecutive days to 500, 300, 300, 300 milligrammes on consecutive days. The oral administration of vitamin C effects some improvement, but is much less rapid and less certain. This is thought to be due to incomplete and irregular absorption.

Severe Types of Pyelitis of Pregnancy.

G. VON ILLYES (*Zeitschrift für Urologie*, March, 1939) states that the simplest method of treatment in the more severe types of pyelitis of pregnancy is the retained ureteric catheter. If the latter drains well and yet fever and leucocytosis do not abate, pyonephrotic or abscess development should be suspected. An attempt should always be made, when open operation is performed, to be conservative, by the performance of decapsulation or by the opening of localized abscesses of the organ, if such a procedure seems justified. In the gravest cases of renal destruction, or when the septic condition of the patient calls for complete removal of the cause, nephrectomy is obligatory.

Vesical Neck Dysfunction in Women.

TWENTY-FOUR cases of vesical neck dysfunction in women are discussed by G. J. THOMPSON (*Journal of Urology*, March, 1939). Most of these suffered from difficulty in micturition, with more or less chronic retention of urine and some with overflow incontinence. None of this group had cystocele, urethral calculus or diverticulum, which are proved to cause retention of urine in women. Cystoscopically the lesion is difficult to determine, but with the retrograde lens the sphincter is seen to be hypertrophied and the epithelium redundant. Sphincterotomy was first performed, but the author now advises transurethral resection of the hypertrophied tissue from the whole circumference of the bladder neck. Dilatation with the Kollman dilator is recommended for some months after operation to forestall the tendency to recurrence. Pathologically the resected tissue consists of hypertrophied and oedematous epithelial and subepithelial structures and some muscle fibres. Glandular tissue has not been observed.

Transillumination of the Bladder.

In suprapubic operation for treatment of vesical tumours C. G. ENGELS (*Journal of Urology*, May, 1939) recommends transillumination by the insertion of a Cameron light through a small cystotomy opening. When the bladder is filled with a clear solution the outline of a tumour of the fundus can be seen clearly and the operator easily avoids incising it.

Special Articles on Civilian War Casualties.

I.

AIR RAID PRECAUTIONS, OR PASSIVE AIR DEFENCE IN AUSTRALIA.¹

1. After the termination of the Great War of 1914-1918 many experts in Great Britain, and others, gifted with a sense of vision, were of the opinion that in any future war of magnitude the civil population of the country would suffer largely from the consequences of hostile aerial attacks. Amongst other things it was appreciated that gas attacks from the air were perfectly feasible and could produce incalculable results, particularly if launched against a civil population uneducated in respect of the possibilities and the limitations of gas, and unprovided with any form of anti-gas equipment.

Governmental enthusiasm waxed and waned over the years, and it was not until 1934 and 1935 that the Government of Great Britain, lagging behind most other countries of Europe, created an Air Raids Precaution Department under the Home Office. This new department was charged with the duty of controlling and directing all activities in connexion with the development of schemes for the passive protection of the civil population in the event of hostile aerial attacks. For an initial period the new "A.R.P." Department concentrated its efforts on the gas aspect of the problem, in which a wide field could, and had to, be covered from an instructional and organizational point of view. Gradually the scope of all activities, however, developed into the wider aspect of air raids precautions as we generally understand the term today.

2. In Australia the Commonwealth Government, in May, 1936, requested the government of each State to undertake, under military guidance, the task of preparing schemes for the protection of the civil population of the various capital cities from the effects of hostile aerial gas attacks. It was explained that in certain circumstances in time of war hostile ships operating off our coasts might release one or more ship-borne aircraft over our important cities and that such aircraft might employ gas as a weapon directed against the civil population. The request of the Commonwealth Government met with a variable response, and at the time two only of the States took the matter up seriously. These States established committees charged with the duty of examining the problem and submitting recommendations as to the most effective action which should be taken to combat the possible danger visualized by the Commonwealth Government.

3. At a conference of Commonwealth and State ministers in August, 1936, the matter was further discussed and the States agreed to develop anti-gas activities along the lines suggested. Again, despite some degree of agreement as to the action necessary, little still was accomplished in certain States. However, stimulated by the international events of 1937 and 1938, all States had by January, 1939, accomplished something in the required direction.

4. On March 31, 1939, at a further conference of Commonwealth and State ministers held at Canberra, each State was strongly urged to reaffirm its previous decision to proceed with air raid precautionary planning along specific lines, as suggested by the Commonwealth. The States adopted a resolution agreeing to proceed vigorously with their respective "A.R.P." schemes, and they further agreed as to the desirability of the early completion of such schemes. At this conference the Commonwealth Government indicated clearly to the States the salient requirements of an efficient "A.R.P." scheme, and provided information in respect of the assistance it would render States in connexion with the supply of "A.R.P." (anti-gas)

equipment for training purposes, "A.R.P." official publications and "A.R.P." equipment to be held in reserve for emergency purposes.

5. Prior to March, 1939, directive control of State "A.R.P." planning had been vested in the Military Board. The States were informed at the Canberra conference that a special section was being created within the Secretariat, Department of Defence, to deal in future with civil defence matters, including air raids precautions. A Director of Civilian Defence and State Cooperation has now been appointed in charge of this special section within the secretariat.

6. In approaching the subject of air raids precautions in Australia it is most essential that we appreciate how differently we are situated from European countries at the present time. It is necessary, therefore, that we view our local problems in proper perspective, and that we do not allow enthusiasm to stampede us into measures which clearly are not warranted, at this juncture. Our geographical position indicates that in the present stage of aerial development hostile air attacks on Australia must be developed by ship or carrier-borne aircraft. A recognition of that basic fact, therefore, must make it clear that in the initial stages of a war only a very limited number of aircraft could possibly be employed against this country. In such circumstances it is not unreasonable to assume that in the main the objectives selected for attack would be those of military importance and that indiscriminate attacks would not be launched deliberately against the civil population. It will be appreciated that the population living in and around these objective areas must automatically suffer, possibly to a very large extent, as a result of such attacks. Objectives of military importance may include, of course, certain important industrial establishments employing civilian labour and located in congested areas. Such establishments, although primarily of a civilian character, may, by the very nature of the undertakings and their importance to the military, civil and general economic well-being of the country, particularly during war, reasonably be included under the wide general heading of military objectives.

7. Having regard to the relatively light forms of aerial attack to which Australia might be subjected, certainly in the early stages of a war, it is legitimate to conclude that gas as a weapon would not offer very great advantages to an attacker. The quantity of gas required to produce results of appreciable value to an opponent, considered in relation to the limited number of aircraft which he could employ for such purposes, suggest that high explosive and incendiary bombing attacks are much the more likely.

Our climatic conditions, other than during winter months, are such as to limit the effectiveness of gas, particularly when released in relatively small quantities. That factor, therefore, tends to support the viewpoint that, under existing conditions, Australia should not be unduly alarmed as to the possibilities of gas attacks being directed against the civil population.

Gas nevertheless does remain as a distinct risk. We cannot, therefore, disregard the possibility of its employment against us. Training in anti-gas measures is essential, and as the subject has wide ramifications and requires specialized treatment, this one phase of air raid precautionary planning has acquired a degree of publicity which, unfortunately, has created in many minds the impression that gas is all that we have to fear. It is highly desirable, therefore, that those who are charged with responsibility for developing phases or aspects of "A.R.P." schemes, or those who, by reason of their standing in the community, are capable of influencing public opinion, should retain a balanced outlook and refrain from indulging in alarmist and destructive critical statements.

8. "Forewarned is to be forearmed"; and in no case is this truer than with regard to "A.R.P." activities. The greatest danger we have to fear in air raids is panic which results from confusion and lack of knowledge. Confusion can be averted by organization, and lack of knowledge can be overcome by training.

¹ A lecture delivered under the auspices of the Melbourne Permanent Post-Graduate Committee.

The psychological effects of an air raid may well be out of all proportion to the material results. Noise, ignorance, surprise, suspense and false rumours all contribute to produce panic, a factor which may enable an enemy to effect great damage to national morale. Everything possible must accordingly be done by discipline and by careful training and organization to minimize the effects of a hostile air attack when it comes—if ever it does come. Knowledge of the proper course to adopt and a realization that an efficient passive defensive organization is in being must go far to counteract any tendency to panic.

An appreciation of the foregoing facts makes it apparent that general public education must proceed simultaneously with the detailed training and organization of an adequate number of persons to permit of the staffing of the various services essential under an efficient air raids precautions scheme.

9. Space will not permit of detailed references to each of the important subjects which must form an integral portion of an efficient "A.R.P." scheme. It will be obvious, however, that any such scheme must make provision for all necessary arrangements to cover such subjects as the following: (i) prevention of panic, (ii) protection of personnel against high explosive bombing, (iii) prevention and localization of fires, (iv) protection of personnel against gas, (v) maintenance of vital services (water, food, transport, sanitation, communications *et cetera*), (vi) provision of an adequate warning system, (vii) provision of a medical organization for the collection of casualties and their treatment, (viii) lighting restrictions.

Each of these headings constitutes a subject which in itself has wide ramifications and affords scope for a great deal of hard work of a most extensive nature. Each subject in effect lends itself to treatment as a definite sub-scheme of the major and general protective scheme. It will, of course, be evident that these sub-schemes must be coordinated in order that confusion, overlapping and duplication of effort and resources may be obviated. The efficient general scheme, therefore, will result only from enthusiastic team-work on the part of all concerned. Enthusiasm is essential; but it must be tempered with judgement. The object to be achieved must be kept clearly in mind and a balanced perspective maintained after due consideration of all the factors which will affect the attainment of the object.

10. Air raids precautions, although unfortunately an essential requirement of modern national defence measures, constitute a new subject, of which there are at present few persons possessed of any great knowledge. There are, moreover, few precise data on which to work, with the result that not even the knowledge of experts is complete and that some of the theories on which passive air defence measures are based might even prove faulty. In Australia full use is being made of the information freely supplied by Great Britain, and if we are given the willing cooperation of those best qualified to render assistance, the production of "A.R.P." schemes, suitable to our situation and existing conditions, is well within our capacity.

J. J. L. McCALL,

Major, Australian Staff Corps,
Director of Civilian Defence
and State Cooperation.

British Medical Association News.

SCIENTIFIC.

A MEETING of the New South Wales Branch of the British Medical Association was held on July 27, 1939, at the Robert H. Todd Assembly Hall, British Medical Association House, 135, Macquarie Street, Sydney, Dr. GEORGE BARRON, the President, in the chair.

Wounds of the Hand.

Dr. ARCHIE ASPINALL read a paper entitled "Wounds of the Hand" (see page 529).

Dr. LENNOX TEECE read a paper entitled "Treatment of Wounds of the Hand" (see page 532).

Dr. D. J. GLISSAN said that perhaps the most important thing heard that night was Dr. Aspinall's condemnation of the *status quo* in public hospitals for the treatment of hand and finger injuries and infections. Dr. Glissan had held the same view for a long time. Elderly worn-out patients were admitted to public hospitals with such lesions as incurable malignant disease, and all the resources of the institutions were used in their treatment; the young artisan, who had his whole future before him, went to the hospital with an injured hand and was left frequently to the care of an inexperienced house surgeon. Dr. Glissan thought it an appropriate moment to speak strongly on the matter, and he asked the President's permission to move a motion covering this point later during the evening. One point in Dr. Aspinall's paper had struck him, and that was the relatively long period of incapacity that followed sprains and contusions, shown in the tables. This was his own experience, and apparently nothing could be done about it; but Dr. Glissan thought that it was necessary to inform the patient who had sustained such an injury and his relatives that healing of the injury would take a long time. Dr. Aspinall had made an important statement when he stressed the importance of rest.

Dr. Glissan said that Dr. Teece had not said anything very new. Some of those present might have been disappointed that Dr. Teece had not ventured on any constructive idea as to what might be done in cases of division of a flexor tendon in the length of the finger. Dr. Glissan supported Dr. Teece's view that primary suture was valueless, but he did not like to leave the matter there. The young artisan who had a flexor tendon divided in the length of the finger should not be left with a comparatively useless finger. Dr. Glissan was prepared to go to very great lengths to try to restore movement in that finger, and his practice was to carry out tendon grafting. Before he embarked on any such lengthy process Dr. Glissan took into account the type of patient and his age; it was useless to try such a procedure if the patient was unintelligent or very old, when the sensation in the finger had been destroyed, or in the presence of ankylosis. Other things being equal, tendon grafting should be carried out; it was the right thing to do. Dr. Glissan used the plantaris; he considered it better to use that relatively useless little muscle, since no further trauma to the forearm muscles was involved.

Dr. Glissan went on to say that he had one quarrel with Dr. Teece: his use of the adjective "invariable". It was one of those immutable, unchangeable words beyond which it was impossible to go, and Dr. Glissan asked Dr. Teece to qualify it. Dr. Teece had stated that when there was a wound of the median nerve, even when it was sutured immediately and healing by first intention took place, the result was bad. Dr. Glissan said that such statements were dangerous, since one single successful case would make them untrue. He had known of cases in which not only the median but also the ulnar nerve was divided at the wrist; he sutured the nerves and ultimately got a complete return of function, not only motor but also sensory. Another such statement was that plaster should invariably be used; that also needed qualification. In Dr. Teece's hands plaster certainly gave excellent results; Dr. Glissan himself preferred to have aluminium and a pair of snips. Dr. Glissan then demonstrated a small finger splint that he had himself devised some time earlier; it entirely immobilized the injured finger but left all the others free. Another point was the simple little injury known as mallet finger. Dr. Teece had said that on no account must operation be performed for this condition, because it was invariably made worse. Dr. Glissan had one patient whose history refuted that entire statement, for by operation he had completely cured his

disability. Splinting was essential if the patient was seen at once; but the splinting must be in the position of hyper-extension of the distal segment. If this was done, union occurred in from four to six weeks. If the damage had been done five or six weeks earlier, then splinting was useless. The best procedure, then, was to fix the little joint in a position of slight flexion. This injury might not matter to the labouring man, but it frequently did to the housewife, in whom it was often found; to her it was a disabling little injury. If the joint was fixed it was perfectly sound. There was just the one period, between three and six weeks after the injury, when, if the surgeon felt inclined to suture the tendon he might be fortunate enough to succeed. Dr. Glissan spoke once again of the danger of making very dogmatic statements; he said that only one case was needed to cut the ground from under the feet of those who made them. He hoped that Dr. Teece would not think that there was anything personal in his criticisms.

DR. RICHARD FLYNN said that he wished to thank the two speakers, whose papers were the product not only of wide reading but also of personal experience. He thought Dr. Teece's had been of particular interest, being based on his own clinical experience. Dr. Flynn wished to stress a point already stressed by Dr. Glissan: the necessity for doing something to improve a stiff finger. Dr. Flynn had seen a few of Dr. Glissan's results, and the fingers were certainly improved. Dr. Flynn asked Dr. Glissan whether he would describe his technique. Dr. Flynn said that Dr. Aspinall had stressed the fact that operations of this type should be done under general anaesthesia; he had not, however, stressed the fact that they should never be done under local anaesthesia. If infection was present the lymphatics were involved, and if a needle was pushed in amongst them some of the lymphatics were possibly divided and a spread of infection was caused. Dr. Flynn said that he used local anaesthesia a great deal and was very fond of it; but it should never be used for infections of the distal portion of the fingers. Another point to which Dr. Flynn wished to refer was that in the treatment of injuries to the thumb it was worth while taking greater risks than in the treatment of injuries to the other fingers. People could get along without other fingers, but not without the thumb, which was the best part of the hand. Dr. Flynn quoted the case of a man who had sustained a severe injury to the hand; two fingers were divided and the thumb was hanging by a small piece of skin. Dr. Flynn explained the risk to the man, who was extremely anxious to retain his thumb. Dr. Flynn then sewed up the wounds, put up the hand in a plaster splint in a position of extension, and left it for six weeks. The ultimate result was the retention of some function. Dr. Flynn then described an accident which he himself had had when he was still a child. He had pushed his hand through a window and his hand had been severely lacerated by the broken glass; the median nerve and several flexor tendons had been severed. His late father had sutured the nerve and tendons at once in his surgery and he (the speaker) was pleased to demonstrate a perfectly functioning hand with normal sensation. The damage had been so extensive that he had been afraid of loss of function; but the hand had healed perfectly.

DR. H. C. R. DARLING said that Dr. Aspinall's paper had particularly interested him in two points. The question of the septic hand had been discussed at the annual meeting of the British Medical Association at Plymouth in 1938, and Dr. Darling had spoken at that meeting. His technique of treatment was that followed by Dr. Aspinall. Dr. Darling laid great stress on the necessity for maintaining a bloodless field and for marking out the tender point; it was then possible to make an incision, to look carefully and to open up the pus cavity, to see that no pockets remained and to establish adequate and free drainage. Dr. Aspinall had spoken of the importance of having the hand bloodless; apparently the idea in Britain was that if the hand was inflamed and a bloodless field was maintained gangrene was likely to result. Dr. Darling had for twenty-five years followed the practice of having

the hand bloodless; he had never seen gangrene, and Dr. Aspinall had never seen it. A fortnight after the meeting at Plymouth Dr. Darling had called in at the casualty department of a large London hospital and saw two shocking hands. He was sure that no attempt had been made to make them bloodless. Dr. Darling then referred to Dr. Aspinall's statement concerning infection following a bite from a human tooth. He said that in New York the results of treatment of such wounds had been so bad that special instructions were posted up in the casualty departments. The technique was to paint the wound with a little brush dipped in fuming nitric acid. Dr. Darling had commented on the method to Dr. Sloane, who had explained that before it was used the results had been appalling, so that they had adopted that extremely drastic measure. Dr. Darling, in conclusion, said that he had introduced these two points because he had recently seen the first condemned in British medical journals.

DR. S. H. LOVELL said that he wished to add his thanks for the papers. In Dr. Aspinall's paper the advisability of general anaesthesia was emphasized, and this was a very important point. There was a tendency to use block anaesthesia; Dr. Lovell thought such a method courted trouble. General anaesthesia gave an opportunity for a thorough but gentle search, which was always needed in these cases. With regard to Dr. Teece's paper, Dr. Lovell said that Dr. Teece was able to make dogmatic statements out of his great experience. However, Dr. Teece's condemnation of the use of the silk suture appeared questionable; Dr. Lovell said that he liked it for the suturing of tendons and nerves, and he had seen no ill effect follow. In connexion with that fact and with Dr. Teece's pessimistic outlook on suture of the ulnar and median nerves, Dr. Lovell said that in June, 1939, he had been able to discharge from treatment two patients who had sustained median and ulnar nerve injuries eighteen months earlier. He had used silk sutures and the end result was very happy. They had not complete power, but it was difficult to detect that there was anything wrong with the hand on superficial examination. In conclusion, Dr. Lovell said that he wished to ask whether any of those present had seen any reference to or had had any personal experience of the prophylactic use of sulphanilamide compounds in wounds of the hand.

DR. R. A. MONEY thanked both speakers and said that he had especially enjoyed Dr. Aspinall's paper. Right through it he had found the ideas of their old teacher, the late Sir Herbert Maitland. One of his pet subjects had been the insistence upon the use of a lateral, not a median, incision when opening septic fingers. With reference to Dr. Lovell's question concerning sulphanilamide, Dr. Money said that he had had one experience only. Following an injury to the hand, he had operated to replace a dislocation of one of the metacarpal bones. The patient had previously had a septic infection of one of the fingers. After operation cellulitis of the whole hand and forearm occurred, and the temperature rose to 103° F. or so; sulphanilamide was given, and within thirty-six or forty-eight hours much discharge occurred and the swelling went right down. Dr. Money said that he had not used sulphanilamide prophylactically, but if an injured hand swelled he would use it. It was necessary to know what the infecting organism was. If it was a streptococcus, sulphanilamide was the correct agent to use; if it was a staphylococcus, "Uleron" would be better. Dr. Money then referred to the use of a suitable tourniquet; he said that it prevented the field of operation from being obscured by blood, and need not be applied for very long. He stressed the need for rest in wounds of the hand; not only local but general rest was needed. The patient should be kept strictly in bed and not allowed to get up at all, just as if he was suffering from a serious abdominal catastrophe. The injured arm should be comfortably and firmly supported. Another point to which Dr. Money referred was the question of *débridement*. He said that wounds of the hand did not require the use of strong antiseptics; ordinary soap and water or saline solution were sufficient. Blood clot and damaged tissue should be

removed and the skin only should be sutured. The wound should be converted as soon as possible into a closed wound by suture of the skin; it was then best to wait until this had healed and at a later stage to deal with injuries to tendons *et cetera*. Dr. Money then spoke of the question of thrombosis in arteries sometimes found after jarring injuries to the hand. He had recently come in contact with a case similar to that instanced by Dr. Teece in his paper. However, in his experience removal of the thrombosed artery did not result in cure, and the man was still unable to work about eighteen months later. This led up to the question of nerve injuries of the hand. He said that a very trivial injury could cause an ascending traumatic "neuritis" of a small nerve in a finger. The patient complained of constant burning pain, and finally some surgeon operated on the nerve. The pain still persisted, and sometimes amputation followed amputation, until the limb was ultimately removed right up to the shoulder joint. The patient then still had the same pain in the phantom limb. The condition had been extensively referred to recently by Leriche in his book on "The Surgery of Pain", and it was regarded as a sympathetic disturbance, resulting in vaso-constriction and ischæmia. The more operations the patient underwent, the worse the pain became. Sometimes, if a beginning was made early enough with repeated local injections of "Novocain", the vicious circle could be interrupted and cure would result. In this connexion, Dr. Money said that he had been very interested in a paper by Dr. Norman Little on Sudeck's atrophy, which had appeared in THE MEDICAL JOURNAL OF AUSTRALIA on February 18, 1939. The whole question was far too large to be discussed at that stage of the meeting, but the possibility of the condition had to be borne in mind; it had a simple beginning in a slight wound to the hand, a vicious circle was established, and finally, when the whole limb had gone, the patient still had pain, by that time firmly embedded in his central cortex.

Dr. H. H. JAMIESON referred to the use of "Prontosil". He said that he had a patient who had pricked her finger, and from the prick a nasty spreading cellulitis developed, so that the patient became desperately ill and had to be admitted to hospital. Dr. Jamieson began giving her "Prontosil"; and in spite of the fact that she also had pneumonia she was afebrile and was doing very well. Dr. Jamieson wondered whether the pneumonia was due to accident.

Dr. P. FIASCHI said that both speakers had omitted the most essential factor in the treatment of injuries to the hands, that is, the use of tetanus antiserum. It had only to be recalled that in the United States of America in the years from around 1902 to 1908 the numbers of deaths from tetanus brought about by Fourth of July celebrations from wounds produced by bungers, crackers and blank cartridges rose to nearly one thousand *per annum*. The active campaign of the American Medical Association for compulsory antitetanus inoculation in the weeks preceding and following July 4, for all wounds of the extremities, no matter from what cause, produced one of the most successful results of preventive medicine.

Dr. H. A. SWEETAPPLE said that he thought the speakers had referred to the questions of the bloodless operation field and the use of the tourniquet in a way that would give the impression that it was safe to use a tourniquet on an upper limb in the same way as it was used on a lower limb. It was unwise to allow such an impression to be given, for such a procedure was unsafe. The application of a narrow tourniquet to the upper limb was dangerous to the median, radial and ulnar nerves. Dr. Aspinall had spoken of the use of the sphygmomanometer as a tourniquet; it worked very well, but since it obstructed the venous return before the arterial supply, a lot of venous bleeding always resulted. Another type that overcame this difficulty was the Esmark bandage, put on in the form of a puttee. A beginning was made at the lower part of the limb and the bandage was gradually unrolled up the limb. In this way the veins were emptied of blood and the arteries were occluded. The bandage was then undone from below upwards to uncover the

operation field, but the last two or three turns at the upper end were left in place.

Dr. Aspinall, in reply, said that he felt that his paper had been very simple; but there was a tendency to forget the simple things, and it was good occasionally to review them. He thought that for many years the treatment of injuries to the hand had been neglected. With further reference to local anaesthesia, Dr. Aspinall said that it should never be used for operations on septic fingers; he had twice seen gangrene of a finger occur after it. Another point was that in injuries to the hand it was important to save every possible piece of a finger. Dr. Aspinall instanced the case of a man who had four fingers guillotined at the middle of the proximal phalanges of the right hand in a machine accident. By the use of adhesive plaster Dr. Aspinall was able to achieve a result which allowed some residual function with very little obvious deformity. Dr. Aspinall then referred to the value of filleting of a useless finger if skin was needed. One of his patients had a badly crushed hand from which much skin had been torn away; by filleting the hopelessly damaged index finger Dr. Aspinall had been able to get a considerable amount of skin to cover over the raw area of the hand. Dr. Aspinall was in agreement with Dr. Sweetapple on the question of the tourniquet; it should be used for a very short period. He agreed with Dr. Darling that the tourniquet provided the only possible way of opening a poisoned finger, because it was impossible to determine accurately the degree of infection until an incision was made. Dr. Aspinall regretted the damage he must have done in his house surgeon days in opening fingers in the casualty room. Speaking of the injury known as trigger finger, Dr. Aspinall said that he had had personal experience of the condition two years earlier, which had resulted from the over-enthusiastic use of a hoe when on holiday. He had been very worried about it, and had consulted several orthopaedic surgeons, who had all advised him to leave it alone. He had taken their advice and it had gradually recovered. With all injuries of the hand, septic or otherwise, the urine should be tested, as the presence of sugar might be an important factor in treatment.

Dr. Teece, in reply, thanked all those who had contributed to the discussion, particularly Dr. Glissan. Dr. Glissan had made him feel that the ambition of twenty-five years would be realized if he could be shown actual return of good function after a tendon grafting operation on the length of the finger. He would be nearly as interested to see a successful suture of a torn extensor tendon at the base of the distal phalanx of the finger. Dr. Teece had been hoping to see these; he had been able to observe not only his own poor efforts, but also the results of operations performed by many different surgeons, and he had never seen the results considered possible by Dr. Glissan. With regard to dropped finger, Dr. Teece said that he was unable to see why a dropped finger should be so important to the comparatively unoccupied housewife and not important to the working man; he would have thought the opposite to be the case. Referring to the question of splints, Dr. Teece said that it was a matter entirely for the individual; X used aluminium, Y preferred plaster. Dr. Teece then said that if he had given the impression that he had never seen vast improvement follow suture of nerves, he had misled the gathering; he had seen a considerable degree of improvement. But the seriousness of such injuries could not be denied, and unfortunately such recovery as did occur was very slow of attainment and meant considerable loss of wages.

The following motion was then proposed by Dr. Glissan, seconded by Dr. Aspinall, and carried:

That in the opinion of this meeting the attention of the medical boards of the various metropolitan hospitals should be called to the necessity of providing adequate surgical facilities for the treatment of patients attending with injuries or infections of the hand and/or fingers.

The Royal Australasian College of Physicians.

EXAMINATION FOR MEMBERSHIP.

THE following candidates were successful at the examination for membership held in Sydney in September, 1939, and were admitted as members of the college on September 8.

New South Wales: Dr. S. D. Allen, Dr. U. L. Brown, Dr. Leslie Cowlishaw, Dr. E. M. A. Day, Dr. T. S. Douglas, Dr. Leo R. Flynn, Dr. E. W. Frecker, Dr. C. R. Furner, Dr. W. E. George, Dr. D. G. Hamilton, Dr. M. D. H. Harpur, Dr. T. A. Glennie Holmes, Dr. A. R. Hunt, Dr. W. L. Kirkwood, Dr. F. A. E. Lawes, Dr. W. P. MacCallum, Dr. W. J. McCristal, Dr. E. H. Miles, Dr. C. F. A. de Monchaux, Dr. S. G. Nelson, Dr. Willa Nelson, Dr. R. K. Rae, Dr. D. M. Ross and Dr. E. A. Woodward.

Victoria: Dr. G. W. F. Alberry, Dr. S. A. Sewell and Dr. T. E. Wilson.

South Australia: Dr. R. G. Burnard and Dr. R. A. A. Fellow.

Queensland: Dr. Clive H. Sippe.

Correspondence.

INCUBATION PERIOD FOR A GONOCOCCAL INFECTION IN THE MALE.

SIR: I would like to report the case of a male, single, aged thirty, who reported with a copious urethral discharge (containing Gram-negative intracellular diplococci) on September 2. He stated that he had had no symptoms whatever until the previous day, when he had some slight scalding, and that his last intercourse was on July 14, giving an incubation period of seven weeks and one day. He had no previous history of any urethral irritation and no motive for confusing the issue.

I have never met with a similar case and can only surmise that it may have something to do with the alteration in the toxicity of the gonococcus brought about by the present use of sulphanilamide in treatment. Should this be so, we may have to alter our present belief that "the incubation period of gonorrhoea varies on the average from two to ten days".

Yours, etc.,

V. N. B. WILLIS.

Wickham House,
Wickham Terrace,
Brisbane.
September 5, 1939.

SHELL-SHOCK AND SEPTIC FOCI.

SIR: There is an old saying that to be forewarned is to be forearmed. We are about to embark upon another war, with all the horrors that such a war entails. We have not only to think of the immediate mutilation and destruction that require attention, but of those incapacities which follow for years after the cessation of hostilities, and the necessary expense involved in the maintenance of those on whom war has cast its malignant blight. Figuring largely amongst these post-war derelicts are those suffering from neuroses or so-called shell-shock. In the August 10, 1918, number of our journal I wrote a short note on "A Plea for the Adequate Recognition of the Part that can be Played in Shell-Shock by Septic Foci". We can to a

large extent limit the number of such cases occurring. The basis of this condition is sympathetic hyperactivity run riot. It is well known that the sympathetic nervous system controls all relating to the defence of the body. It is immaterial whether the individual is fighting against bacterial invasion, financial troubles, beasts or man himself, the reaction is the same. The mental strain of men under fire week in and week out is alone sufficient to cause a nervous breakdown; but if the defence forces of the body have also to be employed against bacterial invasion this mental breakdown will come all the quicker. Treating a number of these cases during the last war, it was found that by clearing up infected tonsils, antra et cetera the symptoms in many cases quickly disappeared. There are many men who to all appearances are fit and strong, yet carry these infections. When these men are subjected to conditions of trench warfare in mud and wet these mild infections are aggravated and pave the way for the mental breakdown which may be impending. By paying special attention to these matters in the examination of recruits a great deal of invalidism and Government expense will be spared.

Yours, etc.,

Ballarat,
Victoria,

September 21, 1939.

SYDNEY PERN.

Post-Graduate Work.

WEEK-END COURSE AT PARRAMATTA.

THE New South Wales Post-Graduate Committee in Medicine announces that, in conjunction with the Central Western Medical Association, it will hold a week-end course at Parramatta on Saturday, October 21, and Sunday, October 22, 1939. The programme is as follows:

Saturday, October 21, 1939.

(At Parramatta District Hospital.)

2.30 to 3.30 p.m.—"Injuries of the Knee Joint: Their Diagnosis and Treatment", Dr. L. G. Teece.

4 to 5 p.m.—"Rheumatism in Childhood", Dr. Edgar Stephen.

Sunday, October 22, 1939.

(At Parramatta District Hospital.)

10 to 11 a.m.—"Pyelitis", Dr. Edgar Stephen.

11.30 a.m. to 12.30 p.m.—"Practical Hints on the Treatment of the Commoner Fractures", Dr. L. G. Teece.

2 to 3 p.m.—"Some Disorders of the Alimentary Tract in Children", Dr. Edgar Stephen.

3 to 4 p.m.—"Fractures in the Region of the Ankle Joint", Dr. L. G. Teece.

The fee for the course will be one guinea. Those intending to be present at the course are requested to notify Dr. K. S. Macarthur Brown, "Brislington", 12, George Street, Parramatta, as soon as possible.

Naval, Military and Air Force.

APPOINTMENT.

THE undermentioned appointment has been promulgated in the *Commonwealth of Australia Gazette*, Number 90, of September 28, 1939.

CITIZEN NAVAL FORCES OF THE COMMONWEALTH.

Royal Australian Naval Reserve.

Charles Frederick Harrington is appointed Surgeon Lieutenant, dated 1st September, 1939.

Obituary.

HARRIETT ELIZA BIFFIN.

WE are indebted to Dr. Margaret Harper for the following account of the career of the late Dr. Harriett Eliza Biffin.

Dr. Harriett Biffin, whose death occurred on September 22, was born in Sydney and graduated M.B., Ch.M. at the University of Sydney. She was one of the first women graduates in medicine in this State. Like all the women of her time, she had to go to another State for her hospital experience. It was not until after 1906, when Dr. Jessie Aspinall was appointed a resident medical officer at the Prince Alfred Hospital, that a breach was made in this prejudice.

Dr. Biffin was appointed resident medical officer at the Adelaide Hospital, and, having completed her time there she returned to Sydney. After practising for some years in Elizabeth Street she settled in Lindfield in 1904 and practised there until 1929, when she retired.

To her fell what Osler has called "the happiest and most useful lot given to man—to become a vigorous, whole-souled, intelligent general practitioner". Like all pioneers, she had many difficulties to overcome, but gradually built up a large general practice. She became the trusted family counsellor to many. Her courage and cheerfulness brought comfort and help to all those with whom she came in contact. In her work she was careful, honest and sympathetic. Her patients' welfare was the first consideration with her, and if a consultation was required the consultant she suggested was accepted without question.

Among the men with whom she worked were Charles Clubbe, George Rennie, Gordon Craig and Robert Scot Skirving, and these men were her friends. She was always on the look-out to help the younger medical women. She insisted on having a woman anaesthetist for her surgical cases, and whenever possible put work in the way of those beginning practice.

For many years she was honorary physician at the Mater Misericordiae Hospital, and during the last war she undertook a large part of the medical work of this hospital. She was one of the founders of the Rachel Forster Hospital, and a large proportion of the original workers for and contributors to the funds of the hospital came from her patients. She remained an active worker for the hospital until the last few months, when ill health reduced her activities.

On her retirement from practice, wishing to recognize the work done for women by Dr. Biffin, the medical women presented her with a sum of money for the hospital. She decided that this should be used to equip the new operating theatre. She was honoured by His Majesty the King a few years ago, being made an M.B.E.

To those of us who have known and worked with Dr. Biffin, her death stirs many memories of kindness and loyalty. Her success in practice at Lindfield has done much to overcome the early prejudice against women doctors. For a successful life, it has been said, "only two things are essential, to live uprightly and to be wisely industrious". Harriett Biffin fulfilled both these essentials and the influence of her work remains.

THOMAS TAYLOR DOWNIE.

WE regret to announce the death of Dr. Thomas Taylor Downie, which occurred on September 24, 1939, at Melbourne, Victoria.

JAMES ADAM JOHNSTON MURRAY.

WE regret to announce the death of Dr. James Adam Johnston Murray, which occurred on September 26, 1939, at Opatiki, New Zealand.

Proceedings of the Australian Medical Boards.

NEW SOUTH WALES.

THE undermentioned have been registered, pursuant to the provisions of the *Medical Practitioners Act, 1938-1939*, of New South Wales, as duly qualified medical practitioners:

- Seward, Effie Winsome, M.B., B.S., 1937 (Univ. Melbourne), 198, Shaftesbury Road, Eastwood.
 Hennessy, James Alphonsus, M.B., Ch.B., 1919 (Edinburgh), 7, St. Neot's Avenue, Potts Point, Sydney.
 Boscence, William Edward Bruce, M.B., B.S., 1937 (Univ. Adelaide), Broken Hill Hospital, Broken Hill.
 Hains, John Ivan, M.B., B.S., 1939 (Univ. Sydney), The Brisbane and South Coast Hospitals Board, Brisbane.
 Carter, Donald Ashley Billing, M.B., B.S., 1938 (Univ. Sydney), 117-127, Ipswich Road, Woolloongabba, S.2, Brisbane.

QUEENSLAND.

THE undermentioned have been registered, pursuant to the provisions of the *Medical Acts, 1925 to 1935*, of Queensland, as duly qualified medical practitioners:

- Candi, Giovanni, M.D., 1934 (Pisa), Brisbane.
 Fitz-John, Jean Marie Lyell, M.B., B.S., 1939 (Univ. Sydney), Brisbane.
 Millar, Roy Henry Blythe, M.B., B.S., 1939 (Univ. Sydney), Toowoomba.

TASMANIA.

THE undermentioned has been registered, pursuant to the provisions of the *Medical Act, 1918*, of Tasmania, as a duly qualified medical practitioner:

- Goldman, Maurice, M.B., B.S., 1938 (Univ. Sydney), Wynyard.

Books Received.

PRIMITIVE TUBERCULOSIS, by S. L. Cummins, C.B., C.M.G., LL.D., M.D.; 1939. London: John Bale Medical Publications Limited. Demy 8vo, pp. 221, with illustrations. Price: 10s. 6d. net.

THE PRACTITIONER HANDBOOKS. DIET IN HEALTH AND DISEASE, edited by H. Rolleston, Bt., G.C.V.O., K.C.B., M.D., F.R.C.P., and A. A. Moncrieff, M.D., F.R.C.P.; 1939. London: Eyre and Spottiswoode Limited (for The Practitioner). Demy 8vo, pp. 382. Price: 14s. net.

HISTORIC TINNED FOODS; Second Edition; 1939. Greenford: International Tin Research and Development Council. Demy 8vo, pp. 70, with illustrations.

END-RESULTS IN THE TREATMENT OF GASTRIC CANCER: AN ANALYTICAL STUDY AND STATISTICAL SURVEY OF SIXTY YEARS OF SURGICAL TREATMENT, by E. M. Livingstone, B.Sc., M.D., and G. T. Pack, B.Sc., M.D., F.A.C.S., with a foreword by B. C. Crowell, M.D.; 1939. New York: Paul B. Hoeber Incorporated. Imperial 8vo, pp. 179, with illustrations. Price: \$3.00 net.

ELECTROCARDIOGRAMS: AN ELEMENTARY ATLAS FOR STUDENTS AND PRACTITIONERS, by H. W. Jones, M.D., M.Sc., F.R.C.P., and E. N. Chamberlain, M.D., M.Sc., F.R.C.P.; 1939. Bristol: John Wright and Sons Limited. Demy 8vo, pp. 51, with illustrations. Price: 3s. 6d. net.

LEAGUE OF NATIONS PUBLICATIONS. BULLETIN OF THE HEALTH ORGANISATION, Volume VIII, Parts 1, 2 and 3; 1939. Geneva: Publications Department of the League of Nations. Medium 8vo, pp. 386. Price: 2s. 6d. net.

Nominations and Elections.

THE undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Santow, Geza Stephan, L.R.C.P., L.R.C.S. (Edinburgh), L.R.F.P.S. (Glasgow), 1939, 679, New South Head Road, Rose Bay.
 Willsire, John Matcham, M.B., B.S., 1939 (Univ. Sydney), Royal North Shore Hospital, St. Leonards.

Diary for the Month.

- OCT. 10.—New South Wales Branch, B.M.A.: Executive and Finance Committee, Organization and Science Committee.
 OCT. 13.—Queensland Branch, B.M.A.: Council.
 OCT. 17.—New South Wales Branch, B.M.A.: Ethics Committee.
 OCT. 18.—Western Australian Branch, B.M.A.: Branch.
 OCT. 19.—New South Wales Branch, B.M.A.: Clinical Meeting.
 OCT. 24.—New South Wales Branch, B.M.A.: Medical Politics Committee.
 OCT. 25.—Victorian Branch, B.M.A.: Council.
 OCT. 26.—New South Wales Branch, B.M.A.: Branch.
 OCT. 26.—South Australian Branch, B.M.A.: Branch.
 NOV. 1.—Western Australian Branch, B.M.A.: Council.
 NOV. 1.—Victorian Branch, B.M.A.: Branch.
 NOV. 2.—South Australian Branch, B.M.A.: Council.
 NOV. 3.—Queensland Branch, B.M.A.: Branch.
 NOV. 7.—New South Wales Branch, B.M.A.: Organization and Science Committee.

Medical Appointments.

Dr. H. M. Southwood has been appointed Acting Deputy Superintendent of the Enfield Receiving House, in the Inspector-General of Hospitals Department, South Australia.

Dr. A. H. Lendon has been appointed representative of the British Medical Association on the Dental Board of South Australia.

Dr. T. King has been appointed a Medical Referee at Melbourne, pursuant to the provisions of the *Workers' Compensation Acts* of Victoria.

Dr. S. E. L. Kahla has been appointed a Medical Officer in the Department of Mental Hospitals of New South Wales.

Dr. J. A. Emmett has been appointed, in pursuance of the provisions of *The Workers' Compensation Acts, 1916 to 1936*, of Queensland, a Medical Referee for the purposes of these acts.

Dr. L. O. Betts has been appointed Honorary Consulting Orthopaedic Surgeon and Dr. H. M. Jay has been appointed Honorary Consulting Laryngologist in the Tuberculosis Services of the Inspector-General of Hospitals Department, South Australia.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser", pages xviii-xx.

GOVERNMENT OF TASMANIA: Government Medical Officers.
 ROYAL NORTH SHORE HOSPITAL OF SYDNEY, NEW SOUTH WALES: Junior Resident Medical Officer.
 SURAT DISTRICT HOSPITAL, SURAT, QUEENSLAND: Medical Officer.
 THE BRISBANE AND SOUTH COAST HOSPITALS BOARD, QUEENSLAND: Medical Officers.
 VICTORIAN EYE AND EAR HOSPITAL, MELBOURNE, VICTORIA: Resident Medical Superintendent, Resident Surgeons.
 WINTON HOSPITALS BOARD, WINTON, QUEENSLAND: Medical Superintendent.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment referred to in the following table without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCHES.	APPOINTMENTS.
	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phoenix Mutual Provident Society.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	Brisbane Associate Friendly Societies' Medical Institute. Proserpine District Hospital. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.
QUEENSLAND: Honorary Secretary, B.M.A. House, 235, Wickham Terrace, Brisbane, B.17.	All Lodge appointments in South Australia. All Contract Practice Appointments in South Australia.
SOUTH AUSTRALIAN: Secretary, 173, North Terrace, Adelaide.	Wiluna Hospital. All Contract Practice Appointments in Western Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 205, Saint George's Terrace, Perth.	

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

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